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Award Number: W81XWH-12-2-0033

TITLE: NRC/AMRMC Resident Research Associateship Program

PRINCIPAL INVESTIGATOR: Howard R. Gamble, Ph.D.

CONTRACTING ORGANIZATION: National Academy of Sciences
Washington, DC 20001

REPORT DATE: May 2013

TYPE OF REPORT: Annual

PREPARED FOR: U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

DISTRIBUTION STATEMENT: Approved for Public Release;
Distribution Unlimited

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE	**2. REPORT TYPE**	**3. DATES COVERED**
May 2013	Annual	1 May 2012 – 30 April 2013

4. TITLE AND SUBTITLE

NRC/AMRMC Resident Research Associateship Program

5a. CONTRACT NUMBER

5b. GRANT NUMBER
W81XWH-12-2-0033

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

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5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

National Academy of Sciences
Washington, DC 20001

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Army Medical Research and Materiel Command
Fort Detrick, Maryland 21702-5012

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution Unlimited

13. SUPPLEMENTARY NOTES
This same report is submitted for contracts W81XWH-12-2-0010; W81XWH-12-2-0015; W81XWH-12-2-0018; and W81XWH-12-2-0030

14. ABSTRACT

During this reporting period, the NRC promoted research opportunities at AMRMC institutes through a broad outreach plan. A total of 36 applications were received during the period and of these, 30 were reviewed by NRC panels. A total of 17 award offers were made and all 17 applicants accepted the awards. The productivity of thse Associates is listed in the technical report

15. SUBJECT TERMS
Associateship program, post-doc, awards

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					USAMRMC
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
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National Research Council

RESEARCH ASSOCIATESHIP PROGRAM

with

U.S. Army Medical Research & Materiel Command

Annual Contract Technical Report

Contract No. W81XWH-12-2-0033

Contract Period: 05/01/2012-04/30/2017

Report Period: 02/06/2012-04/30/2013

During the reporting period, the NRC conducted the following activities in support of the subject contract:

Outreach and Promotion

The promotional schedule to advertise the National Research Council (NRC) Research Associateship Programs included the following: 1) attendance at meetings of major scientific and engineering professional societies; 2) advertising in programs and career centers for these and other professional society meetings; 3) direct mailing and emailing of announcements and program materials to presidents, graduate deans, and heads of appropriate science and engineering departments and minority-affairs offices of all academic degree-granting institutions in the United States; 4) posting announcements on internet job sites, electronic newsletters and professional society websites; 5) print advertising in high profile publications (e.g., Science magazine, the Chronicle of Higher Education); and, 6) maintaining a presence on social media sites such as Facebook.

The NRC attended a number of minority focused events in which we maintained exhibit booths, participated in workshops and advertised in meeting literature, newsletters and websites or submitted materials for distribution. In addition, ads were placed in a variety of minority publications (e.g., Affirmative Action, Black Collegian).

In advertising the Research Opportunities available to prospective applicants, the NRC maintained an up-to-date listing of all active Research Advisers, current Adviser contact information and details of each Research Opportunity.

Processing and Review of Applications

Applications to the Research Associateship Program were submitted via a web-based application system. Each of the four application cycles opened two months prior to the application deadline. NRC staff provided support to prospective applicants including providing application instructions, technical support and additional information as requested.

A summary of applications for the reporting period is shown in Table 1.

For each applicant, the NRC received and processed an application form, a research proposal, transcripts, a statement of previous and current research, and confidential reference reports. An application file check was made prior to the review and each applicant was notified if required documents were missing.

The NRC convened panels in five broad discipline areas for the competitive review of applications in the Research Associateship Programs. Results of the review were made available to Laboratory Program Representatives immediately following the conclusion of the each review.

A summary of the outcome of the review of applications for the reporting period is shown in Table 1.

Administration of Awards

The NRC made awards to applicants based on sponsor authorization. A summary of awards authorized and the acceptance or declination by the applicant during the current reporting period is shown in Table 1.

For Associates beginning or continuing tenure, the NRC provided the administrative functions described in the contract Statement of Work. These functions included stipend payments, management of a major medical benefits insurance program, and reimbursement for relocation and travel to professional meetings.

A summary of NRC Research Associates on tenure during the reporting period is shown in Table 2.

Outcomes Reporting

All NRC Associates who completed tenure were required to submit a final report that described the outcome of their Associateship award. Final reports received by the NRC during the current reporting period are attached to this technical report.

The activities of Associates submitting final reports during this reporting period, including publications, presentations and patents, as well as an assessment of their experience in the program, are summarized in Table 3. Specific research accomplishments of Associates completing tenure during the reporting period are summarized in Table 4.

Table 1. Applications and Awards

Table 2. Associates on Tenure

Table 3. Associates Activity

Table 4. Summary of Associate Research

Attachments: Associate Final Reports

U.S. Army Medical Research & Materiel Command

Table 1: Applications and Awards

	May 2012	Aug 2012	Nov 2012	Feb 2013	Total
TOTAL APPLICATIONS	8	15	5	8	36
Applications not reviewed	1	1	2	2	6
Applications reviewed	7	14	3	6	30
Not recommended	0	0	0	0	0
Recommended	7	14	3	6	30
Withdrawn	0	0	0	0	0
Lab decision pending	0	0	2	3	5
Awards offered	7	9	1	1	18
Applicant decision pending	0	0	0	0	0
Awards accepted	7	9	1	1	18
Awards declined	0	0	0	0	0
Not funded	0	5	0	2	7

Table 2: Associates on Tenure

Associate	Adviser	Tenure Dates	Country of Citizenship	Final Report
U.S. Army Institute of Surgical Research				
Burdette, Alexander Justin	Alvarez, Rene	10/1/2012-9/30/2013	United States	
Chen, Guojun	Devore, David I	8/8/2011-5/14/2012	China	Received
Cheppudira, Bopaiah Pooviah	Clifford, John L	9/4/2012-9/3/2013	India	
Childers, Brandon Michael	Leung, Kai P	7/11/2011-12/31/2012	United States	Not Recv'd
Choi, Jae hyek	Wang, Heuy-Ching H.	11/15/2011-11/14/2013	Korea, South	
Flagg, Shannon Coates	Alvarez, Rene	5/14/2012-5/13/2013	United States	
Greene, Whitney Ann	Wang, Heuy-Ching H.	4/25/2012-4/24/2014	United States	
Hurtgen, Brady Joe	Wenke, Joseph C	12/3/2012-12/2/2013	United States	
Kaini, Ramesh Raj	Wang, Heuy-Ching H.	1/3/2013-1/2/2014	United States	
Karna, Sai Lakshmi Rajasekhar	Leung, Kai P	4/1/2013-3/31/2014	India	
Kreyer, Stefan Franz Xaver	Batchinsky, Andriy I	12/7/2012-12/6/2013	Germany	
Langer, Thomas	Cancio, Leopoldo C.	8/29/2011-11/28/2012	Italy	Received
Meledeo, Michael Adam	Bowman, Phillip Dalton	3/1/2010-7/6/2012	United States	Received
Miller, Christine Lindsay	Leung, Kai P	2/4/2013-2/3/2014	United States	
Muniz, Alberto	Wang, Heuy-Ching H.	10/14/2008-10/13/2013	United States	
Nyland, Jennifer Elaine	Clifford, John L	2/1/2013-1/31/2014	United States	
Parida, Bijaya Kumar	McFaul, Steve J.	3/19/2012-3/18/2014	India	
Pilia, Marcello	Rathbone, Christopher R	9/4/2012-9/3/2013	United States	
Rose, Lloyd Frederick	Leung, Kai P	11/1/2012-10/31/2013	United States	
Salas, Margaux Marie	Clifford, John L	10/10/2012-10/9/2013	United States	
Samberg, Meghan	Christy, Robert John	10/1/2012-9/30/2013	United States	
Sanchez, Carlos Jose	Wenke, Joseph C	9/7/2011-9/6/2013	United States	
Scaravilli, Vittorio	Batchinsky, Andriy I	11/15/2012-11/14/2013	Italy	
Schneider Herrera, Bruno	Leung, Kai P	5/1/2012-4/30/2014	Brazil	
Torres, Luciana Neves	Dubick, Michael A.	5/18/2011-8/17/2012	Brazil	Received
Van Laar, Tricia Annette	Leung, Kai P	4/9/2012-4/8/2014	United States	
Vecchi, Vittoria	Cancio, Leopoldo C.	11/14/2011-10/22/2012	Italy	Received
Ward, Catherine Lindsey	Wenke, Joseph C	8/22/2011-8/21/2013	United States	
U.S. Army Medical Research Institute of Chemical Defense				
Hubbard, Kyle	McNutt, Patrick Michael	6/1/2012-5/31/2014	United States	
Wong, Benjamin Jay	Sciuto, Alfred Mario	2/7/2011-9/4/2012	United States	Received
Yego, E Chepchumba Koech	Dillman, James F.	9/1/2010-7/5/2013	United States	
U.S. Army Medical Research Institute of Infectious Diseases				
Bounds, Callie Elizabeth	Schmaljohn, Connie	3/1/2011-2/28/2014	United States	
Brocato, Rebecca Lee	Hooper, Jay W.	1/19/2011-3/13/2013	United States	Received
Copeland, Anna Maria	Schmaljohn, Connie	1/18/2011-1/17/2014	United States	
Harrell, William Ayers	Smith, Leonard Alan	3/29/2011-3/28/2014	United States	
Heffron, Jared David	Welkos, Susan Lee	8/16/2010-3/15/2013	United States	Received
Johnston, Sara Christine	Goff, Arthur James	3/25/2009-5/1/2012	United States	Received
Kwilas, Steven Alexander	Hooper, Jay W.	4/13/2010-4/12/2014	United States	
Lindquist, Michael Edward	Schmaljohn, Connie	3/1/2011-2/28/2014	United States	
Maes, Piet	Hooper, Jay W.	12/3/2012-12/2/2013	Belgium	
Morazzani, Elaine Marie	Glass, Pamela J	12/1/2011-11/30/2013	United States	
Rahman, Md. Mizanur	Ahmed, Syed Ashraf	3/1/2011-2/28/2014	United States	
Trefry, John Christopher	Honko, Anna Nichole	7/1/2011-6/30/2013	United States	
Walter Reed Army Institute of Research, Silver Spring				
Abente, Eugenio	Bodhidatta, Ladaporn	9/17/2012-9/16/2013	United States	
Boutte, Angela	Dave, Jitendra R.	6/15/2011-1/14/2013	United States	Received
Caudle, Krista Layne	Tortella, Frank Casper	1/28/2013-1/27/2014	United States	
Kobylinski, Kevin Conrad	Romero, Gabriela Zollner	10/17/2011-10/16/2013	United States	
Leung, Lai Yee	Tortella, Frank Casper	2/16/2010-12/31/2012	Hong Kong	Received
Linton, Yvonne-Marie	Wilkerson, Richard C.	10/3/2011-10/2/2013	United Kingdom	
McCoy, Margaret Ellen	Lanar, David Ervin	7/27/2009-10/4/2012	United States	Received
Melendrez, Melanie Crystal	Jarman, Richard George	3/22/2010-5/21/2012	United States	Received
Moore, Nicole LT	Genovese, Raymond F.	7/29/2010-7/28/2013	United States	
Mountney, Andrea	Tortella, Frank Casper	11/15/2010-2/28/2013	United States	Received

Mutihac, Radu	Balkin, Thomas J.	3/1/2011-2/28/2013	Romania	Not Recv'd
Pichard, Luis Eduardo	Wesensten, Nancy J.	7/24/2012-7/23/2013	United States	
Pichugin, Alexander Vladimirovich	Krzych, Urszula	1/12/2009-7/11/2012	Russia	Received
Rajendran, Gnana Ravi	Kozar, Michael Patrick	9/7/2010-8/31/2012	United States	Received
Rossetti, Franco	Yourick, Debra Lynn	6/1/2009-5/31/2013	Brazil	
Sambanthamoorthy, Karthik	Luo, Chunyuan	3/1/2011-2/28/2014	India	
Yoon, K. Lira	Balkin, Thomas J.	1/3/2013-1/2/2014	United States	
Zarling, Stasya Nicole	Krzych, Urszula	2/7/2011-2/6/2014	United States	

Table 3: Associates' Activities

18 Associates ended tenure during the report period
24 months was the average tenure length
42 months was the longest
9 months was the shortest
16 submitted final reports

In the final reports, Associates indicated the following scholarly activity while on tenure.

21 Articles published in refereed journals
0 Patent applications
7 International presentations
40 Domestic presentations
4 Awards

After ending their tenure, Associates indicated their future plans as follows:

1 Permanent position at the NRC host agency
6 Contract or temporary position at the NRC host agency
1 Research/administrative position with another U.S. government agency
1 Research/administrative position with foreign government agency
1 Research/teaching at US college/university
1 Research/teaching position at a foreign college or university
2 Research/administrative position in private industry in the U.S.
0 Research/administrative position in private industry outside of the U.S.
0 Research/administrative position with a non-profit
0 Self-employed/consulting
2 Postdoctoral Research
1 Other
0 No information provided

In their final reports, Associates were asked to evaluate certain aspects of their experiences on a scale of 1 (low) to 10 (high). The average rating for each item follows:

9.2 Short-term value (lab)-Development of knowledge, skills, and research productivity at lab
9.1 Long-term value (career)-How your Research Associateship affected your career to date
8.8 Laboratory Support-Equipment, funding, orientation, safety & health training, etc.
9.6 Adviser Mentoring-Quality of mentoring from the Research Adviser
9.3 LPR Support-Quality of administrative support from the LPR
9.1 NRC Support-Quality of administrative support from the NRC

Table 4: Summary of Associate Research

	Associate	Tenure Dates
Boutte, Angela		**6/15/2011-1/14/2013**
1	Determined the time course of brain derived biomarkers elevated in brain tissue and serum of a rat model of penetrating ballistic-like brain injury (PBBI) (on-going)	
2	Determined the time course of brain derived biomarkers elevated in brain tissue and serum of a rat model post-traumatic stress disorder (fear conditioning) and blast injury (on going)	
3	Determined the effect of therapeutic drugs to prevent increases in brain and serum biomarkers after PBBI	
4	Initiated proteomics analysis of a rat model post-traumatic stress disorder (PTSD) and blast injury (on going)	
5	Grants - Submitted grant proposal to define the markers and mechanism of severe and mild long term brain injury (Combat Casualty Care Program), co-authored pilot grant applications to determine efficacy of therapeutics in PBBI.	
6	Publications - Under the guidance of Dr. Dave, our lab published our proteomics study in the journal Electrophoresis. In a separate cohort using proteomics and bioinformatics prediction of biomarkers, I aided in defining novel biomarkers of PBBI in brain tissue that I have independently confirmed. A bioinformatics-themed manuscript is complete and pending submission.	
Brocato, Rebecca		**1/19/2011-3/13/2013**
1	Evaluated the role of type I interferons to prevent hantavirus pulmonary syndrome (HPS) disease in the Syrian hamster model. This included timing of polyI:C administration, evaluation of different polyI:C formulations, and detection of hamster type I interferons.	
2	Evaluated the ability of egg IgY from avian species vaccinated with the ANDV DNA vaccine to prevent HPS in the hamster model.	
3	Evaluated the ability of Src-kinase inhibitors to prevent vascular leakage in situ and prolong mortality in the hamster HPS model.	
Chen, Guojun		**8/8/2011-5/14/2012**
1	Virus-like particle for antisense ODN delivery	
2	Peptide-oligonucleic acid conjugates for antisense	
3	Co-polymer enhanced liposome for antisense ODN delivery	
Heffron, Jared		**8/16/2010-3/15/2013**
1	Discovered that BenK is an efflux pump protecting vegetative cells from acid stress and present on the spore where it leads to dampened spore germination kinetics through unknown means.	
2	BenK was demonstrated to be recognized in bacterial spores by murine macrophages supporting the argument that the protein is immunogenic.	
3	SleL, a spore coat protein, was recognized by polyclonal anti-spore antibodies.	
4	SleL was overexpressed and purified for future studies.	
5	D-cycloserine is an effective germination enhancer of the L-alanine mediated germination response and might be utilized for widearea spore decontamination.	
Johnston, Sara		**3/25/2009-5/1/2012**
1	MPXV Active Disease Surveillance Program identifying significant increases in prevalence in DRC	
2	Identification of potential novel therapeutic (IFN-beta) against MPXV	
3	Identification of MPXV variants actively circulating in the DRC	
4	In vitro and in vivo evaluation of novel therapeutics against Henipaviruses	
5	Development and implementation of diagnostic ELISA assays against MPXV	
Langer, Thomas		**8/29/2011-11/28/2012**
1	Development of a large animal model to study spontaneous breathing during extracorporeal gas exchange	
2	Study of differences in respiratory pattern between healthy animals and animals with the Acute Respirator y Distress Syndrome	
3	Development of a new techique for the placement of bicaval dual-lumen catheters for venovenous extracorporeal gas exchange	

4	Effects of radiation dose reduction on lung quantitative CT scan results in healthy in the Acute Respiratory Distress Syndrome: low-dose chest CT as a valuable tool for quantification and monitoring of pulmonary disease reducing patient exposure

Leung, Lai Yee **2/16/2010-12/31/2012**

1	Established polytrauma models associated with hypoxemia and hemorrhagic hypotension that will be used for future neuroprotective drug studies.
2	Acute physiological changes were characterized in the polytrauma models. The patterns of these changes were found to be unique under different injury combinations.
3	Hemorrhagic shock increased the incidence and duration of cortical spreading depolarization within 2 hours following PBBI whereas hypoxemia only prolonged the depolarization.
4	Histopathological changes were characterized (3, 7 days post-injury) in the polytrauma models. Hemorrhagic shock increased neuronal degeneration and astrocytic activation following PBBI.
5	The sequence of PBBI, hemorrhagic hypotension and hypoxemia affected the mortality rate and neurological deficits. PBBI, HS followed by HX resulted in the highest mortality rate (50%) and more neurological deficits among all polytrauma groups.

McCoy, Margaret **7/27/2009-10/4/2012**

1	Identified the mechanism of action of SAPN-induced Ab that provides sterile immunity in mice
2	Designed and carried out experiments to examine and characterize the processing and presentation of SAPN within the immune system
3	Examined the phenotypes of SAPN-specific T-cell populations and proved that CD8+ T-cells from mice immunized with SAPN are able to, by themselves, induce sterile immunity in mice- this is the first malaria vaccine to be able to show this.
4	Examined needleless approcahes to vaccine delivery, including pleuronic lecithin organogel creams
5	Identified potential effects on vaccine efficacy resulting from the addition of mosquito saliva
6	The youngest investigator at the WRAIR to successfully write and complete a non-human primate trial for malaria

Meledeo, Michael **3/1/2010-7/6/2012**

1	Aptamers can be used to completely inhibit the anti-coagulant effects of activated protein C (aPC); however, aPC does not appear to be the sole sufficient cause of the acute coagulopathy of trauma.
2	Exposing in vitro cultures of endothelial cells (ECs) to laminar flow (as a model of their physiological environment) will induce a number of changes to both EC morphology and gene expression in a variety of inflammatory and morphology pathways.
3	While not all of the changes in gene expression result in an altered proteome, there are a number of significant differences in protein expression between static cultured ECs and those exposed to flow.
4	An analysis of the EC glycocalyx through confocal microscopy and western blotting of membrane proteins and associated glycoforms has led to an enhanced understanding of the structure and function of the endothelial glycocalyx layer.
5	All of these have provided advancement in the formulation of in vitro models of endothelium; in the future it should be possible to use these models as a platform for the testing of both therapeutics and diagnostics for vascular dysfunction.

Melendrez, Melanie **3/22/2010-5/21/2012**

1	Variants analysis of dengue quasispecies populations showed that variants are host or vector specific despite containing the same consensus sequence. Diversity was found to not be constrained within the vector as suggested in some publications.
2	Selection analysis showed the populations to be expanding, evolving at a faster rate than 'average' for the dataset, and were under selective pressure with a predominance of nonsynonymous mutations when compared with the consensus sequence.
3	Phylogenetic analysis revealed that dengue quasispecies sequences isolated in 2010 were distinct from other ciruclating consensus sequences from Thailand and full E gene offered higher resolution than partial E gene sequences.
4	Amino acid (aa) analysis suggested several positions where changes would affect replication, antibody binding or VLP assembly according to the literature. Multivariate analysis predicted uncharacterized aa positions that would have impact if altered.
5	This work revealed the importance of full E gene surveillance for assessment of aa changes, illustrated the variability and pathogenic potential of dengue quasispecies variant diversity and established a baseline in which to make future comparisons.

Mountney, Andrea **11/15/2010-2/28/2013**

1	Traumatic brain injury (TBI) results in post-traumatic nonconvulsive seizures (NCS) that are more refractory to

	traditional anti-epileptic drugs (AED). Our rodent penetrating ballistic-like brain injury (PBBI) model results in reproducible NCS. This proposal was to identify effective drugs/combination of drugs to treat NCS using systematic dose-response evaluation of carefully selected anti-epileptic drugs.
2	Completion of monotherapy dose-response profiles (traditional AED): ethosuximide and phenytoin, used to treat absence epilepsy or tonic/clonic seizures, respectively, were found to significantly attenuate NCS incidence, frequency, duration and delay onset latency (2 drugs, 5 doses/drug, 15 rats/dose)
3	Completion of monotherapy dose-response profiles (non-traditional AED): gabapentin and levetiracetam, were also found to attenuate NCS in our TBI model (2 drugs, 5 doses/drug, 15 rats/dose)
4	Combination therapy: fixed-dose ratios of phenytoin and ethosuximide combination therapy were determined using isobolographic analysis.
5	NCS in our PBBI model show similarities and differences with spontaneously occurring NCS from a rodent stroke model.
Pichugin, Alexander	**1/12/2009-7/11/2012**
1	10 novel liver stage Pb antigens reduce LS and BS parasite burden in C57Bl/6 mice.
2	3 novel liver stage Pb antigens sustain protection during 6 months after the last immunization.
3	3 novel liver stage Pb antigens enhance protection induced by PbCSP.
4	Established caged MHC-tetramer technology to use for discovery of T cell epitopes in malaria antigens.
5	Identified 3 immunodominant CD8 T cell epitopes from Pb PEVA.
Rajendran, Gnana	**9/7/2010-8/31/2012**
1	Several compounds were synthesized by the SAR of DQ and submitted for in vitro testing against blood stage malaria, specifically P.falciparum D6, W2, C235 and C2B strains, and assessed for metabolic stability in the mouse and human microsomes
2	In many cases the compounds solubility was improved but the compounds either lost potency against the C2B resistant strain of malaria or microsomal stability
3	A few interesting trends were discovered. An unprecedented ester replacement, to the ethyl or morpholine amide was discovered that maintained potency against D6,W2,C235 but unfortunately lost activity against the key C2B atovaquone resistant strain
4	Additionally, many compounds were synthesized that maintained in vitro potency with significantly lower clogP (main focus of the research effort)
5	Efforts are currently toward acquiring a complete set of data to select profile compounds to be scaled up and tested in in vivo models
Torres, Luciana	**5/18/2011-8/17/2012**
1	Intravital Microscopy was successfully employed for investigating EG shedding in hemorrhagic shock/resuscitation for the very first time;
2	Intravital microscopy integrated with systemic hemodynamics evaluations may be essential and more accurate tools to identify changes and study mechanisms of EG shedding and systemic responses to hemorrhage and resuscitation therapy;
3	Compared to baseline and to the sham group, there was a 50% reduction in endothelial glycocalyx (EG) thickness after hemorrhage and 60% increase in the levels of plasma Syndecan-1;
4	Although resuscitation with LR and Hextend could stabilize hypotensive rats hemodynamicaly, these fluids were unable to restore EG thickness or coagulopathy (weak clots and prolonged coagulation time);
5	Rats who received fresh frozen plasma (FFP) restored venular EG thickness to baseline level in addition to improve the systemic hemodynamics and coagulation response (restored homeostasis).
Vecchi, Vittoria	**11/14/2011-10/22/2012**
1	Effects of radiation dose reduction on lung quantitative CT scan results in healthy in the Acute Respiratory Distress Syndrome: low-dose chest CT as a valuable tool for quantification and monitoring of pulmonary disease reducing patient exposure
2	Use of quantitative CT for in vivo lung weight measurement: evaluate and monitor the time course of lung edema in ARDS measuring lung weight by qCT
3	Pressure-guided positioning of bicaval dual-lumen catheters for veno-venous extracorporeal gas exchange
4	Low-flow extracorporeal gal exchange for the treatment of ARDS caused by smoke inhalation and cutaneous burn in pigs
5	Extracorporeal Gas Exchange in awake spontaneously breathing sheep before and after the induction of ARDS
Wong, Benjamin	**2/7/2011-9/4/2012**
1	Developed and characterized novel system for inhalational exposure of conscious animals to chemical agents
2	Utilized above system to examine the toxicokinetics (TK) of nerve agents and their analogs in rats
3	Investigated utility of bronchodilators in a treatment regimen for inhalational chemical agent exposure

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Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Boutte	**Angela**	**M**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Street 8710 CAMERON STREET, UNIT 1414** **City, State Zip SILVER SPRING, MD 20910**	**Home Phone: 301-587-0461** **Alt. Phone: 206-234-3746** **Preferred E-mail: angela.boutte@gmail.com**

3) *Today's Date*	*Dates of Tenure*
10 JAN 2013	from **15 JUN 2011** to **14 JAN 2013**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC **(e.g., AFRL)**	**WRAIR** **(e.g., Wright Patterson AFB)**	**Bran Trauma, Neuroprotection, Neuro-restoration** **(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

JITENDRA R. DAVE

6) *TITLE OF RESEARCH PROPOSAL*

Biomarkers of Traumatic Brain Injuries

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Determined the time course of brain derived biomarkers elevated in brain tissue and serum of a rat model of penetrating ballistic-like brain injury (PBBI) (on-going)

2) Determined the time course of brain derived biomarkers elevated in brain tissue and serum of a rat model post-traumatic stress disorder (fear conditioning) and blast injury (on going)

3) Determined the effect of therapeutic drugs to prevent increases in brain and serum biomarkers after PBBI

4) Initiated proteomics analysis of a rat model post-traumatic stress disorder (PTSD) and blast injury (on going)

5) Grants - Submitted grant proposal to define the markers and mechanism of severe and mild long term brain injury (Combat Casualty Care Program), co-authored pilot grant applications to determine efficacy of therapeutics in PBBI.

6) Publications - Under the guidance of Dr. Dave, our lab published our proteomics study in the journal Electrophoresis. In a separate cohort using proteomics and bioinformatics prediction of biomarkers, I aided in defining novel biomarkers of PBBI in brain tissue that I have independently confirmed. A bioinformatics-themed manuscript is complete and pending submission.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)
N/A

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Post traumatic stress disorder (PTSD), traumatic brain injuries (TBIs) (e.g. blast overpressure (BOP), concussive, or penetrating) affect thousands military personnel. To successfully identify a panel of protein biomarkers that can (1) predict onset/existence and (2) define mechanisms, I am continuing studies in multiple brain regions and bio-fluids. Initial testing of preparative proteomics protocols was successful; each anatomical region (beginning with cerebral cortex) will be analyzed using proteomics and immunological methods. Biomarker abundance changes in tissues and biofluids after penetrating ballistic-like brain injury (PBBI) are being expanded to include therapeutic and sub-acute effects and we have fully developed studies to define biomarkers of mild, concussive, TBI.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

PROTEOMIC ANALYSIS AND BRAIN SPECIFIC SYSTEMS BIOLOGY IN A RODENT MODEL OF PENETRATING BALLISTIC-LIKE BRAIN INJURY Electrophoresis. 2012 Dec;33(24):3693-704.
Angela M Boutté, Changping Yao, Firas Kobaissy, Xi-Chun May Lu, Zhiqun Zhang, Kevin K. Wang, Kara Schmid, Frank C. Tortella and Jitendra R. Dave

b) Books, book chapters, other publications

Protein Biomarkers in Traumatic Brain Injury: An Omics Approach Angela Boutte

c) Manuscripts in preparation, manuscripts submitted

1. SYSTEMS BIOLOGY META-ANALYSES OF GENOMIC DATASETS TO IDENTIFY CONSERVED MECHANISMS AND NOVEL BIOMARKERS OF TRAUMATIC BRAIN INJURY.

2. Time dependant biomarker abundance in brain tissue and serum after acute PBBI

3. Spatial-temporal biomarkers in a model of blast with and without fear conditioning stress in brain tissue and serum after acute and chronic injury

4. The effect of blast injury with and without fear conditioning on the cerebral cortex proteome

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

N/A

Domestic

1. Boutte A, et.al. (2012) Differential Protein Changes in Penetrating and Non-penetrating Models of Traumatic Brain Injury. National Neurotrauma Society Symposium, Abstract #A48.

2. Yu C, Boutte A, et. al. (2012) Systems Biology and Meta-Analysis of Genomic Datasets to Identify Conserved Mechanisms and Novel Biomarkers of Traumatic Brain Injury. National Neurotrauma Society Symposium, Abstract # B48.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

1. Boutte A, et.al. (2012) Differential Protein Changes in Penetrating and Non-penetrating Models of Traumatic Brain Injury. Military Health System Research Symposium, Young Investigators' Forum.

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

N/A

14) *POST-TENURE POSITION / JOB TITLE*

Research Biologist

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Walter Reed Army Inst. For Research

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☒ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity

Comments

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date

Comments

LAB SUPPORT

9 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

LPR SUPPORT

10 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

NRC SUPPORT

10 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Maria Crocco: mcrocco@nas.edu
Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Brocato	**Rebecca**	**L**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution Residence **Street 3200 Pfefferkorn Rd** **City, State Zip West Friendship, MD 21794**	**Home Phone: 504-231-4531** **Alt. Phone:** **Preferred E-mail: brocator@hotmail.com**

3) *Today's Date*	*Dates of Tenure*
3/13/13	from **1/19/11** to **3/13/13**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
USAMRIID	**Fort Detrick**	**Virology**
(e.g., AFRL)	**(e.g., Wright Patterson AFB)**	**(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Jay Hooper

6) *TITLE OF RESEARCH PROPOSAL*

Continued Evaluation of Hantavirus Pathogenesis

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Evaluated the role of type I interferons to prevent hantavirus pulmonary syndrome (HPS) disease in the Syrian hamster model. This included timing of polyI:C administration, evaluation of different polyI:C formulations, and detection of hamster type I interferons.

2) Evaluated the ability of egg IgY from avian species vaccinated with the ANDV DNA vaccine to prevent HPS in the hamster model.

3) Evaluated the ability of Src-kinase inhibitors to prevent vascular leakage *in situ* and prolong mortality in the hamster HPS model.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)
N/A

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Ongoing work involves optimizing the Miles assay in hamsters for refined evaluation of vascular leakage inhibitors, concentrating IgY in an effort to reduce volume for bioavailability and challenge experiments, and conducting plaque assays to evaluate hantavirus persistence in hamsters.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Brocato, R., Josleyn, M., Ballentyne, J., Vial, P., and Hooper, J. (2012) DNA Vaccine-Generated Duck Polyclonal Antibodies as a Postexposure Prophylactic to Prevent Hantavirus Pulmonary Syndrome (HPS). PLoS One 7(4): e35996.

Brocato, R., Josleyn, M., Wahl-Jensen, V., Schmaljohn, C., Hooper, J. Construction and nonclinical testing of a Puumala virus synthetic M gene-based DNA vaccine. Clin Vaccine Immunol 20(2):218-26.

b) Books, book chapters, other publications

None

c) Manuscripts in preparation, manuscripts submitted

Brocato, R., Wahl-Jensen, V., Hammerbeck, C., Josleyn, M., McElroy, A., and Hooper, J. High molecular weight polyI:C protects hamsters from lethal Andes virus-induced hantavirus pulmonary syndrome through the production of type I interferons. (manuscript in preparation)

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

None

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*

Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

None

Domestic

None

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

None

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

None

14) *POST-TENURE POSITION / JOB TITLE*

Research Scientist, The Geneva Foundation

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

USAMRIID, Virology Division
1301 Ditto Ave
Fort Detrick, MD 21702

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☒ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

8 Development of knowledge, skills, and research productivity
Comments
It is difficult to be productive in the beginning of your tenure while you are waiting for clearances, approvals, etc.

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

10 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)
Comments

NRC SUPPORT

8 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

With all the travel restrictions that are in place Army-wide and at USAMRIID, I feel like the NRC could have taken a more proactive role in standing up for the associates and stating that travel to conferences is a NECESSARY component to research and networking for future collaborations. And by limiting that, it hinders the associates ability to show what they are capable of.

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Maria Crocco: mcrocco@nas.edu
Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Chen	**Guojun**	

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **USAMC** Street **3698 chambers pass** City, State Zip **Form sam houston, Tx 78234**	**Home Phone: 4045632931** **Alt. Phone:** **Preferred E-mail: njutcgj@gmail.com**

3) *Today's Date*	*Dates of Tenure*
April 18, 2012	from **08-08-2011** to **August 8, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
USAMC		
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

David. Devore

6) *TITLE OF RESEARCH PROPOSAL*

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) **virus-like particle for antisense ODN delivery**

2) **peptide-oligonucleic acid conjugates for antisense**

3) **Co-polymer enhanced liposome for antisense ODN delivery**

4)

5)

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Virus-like particle project was stopped due to the lack of fresh plant infected tissue. Therefore, two extra backup plans were carried out. One is peptide-oligonucleic acid (PNA) and the other one is liposome delivery system. For PNA project, conjugation are being synthesized and characterized. The preliminary bacteria tests have indicated that PNA can improve the antisense antimicrobial capability. For copolymer enhanced liposome, the copolymers were synthesized. However, the complexing the biological testing are not carried out yet.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

Peptide-oligonucleic acid for mecA antisense in S.aureus

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide titles, inventors, and dates of applications.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*

Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

Domestic

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

14) *POST-TENURE POSITION / JOB TITLE*

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB 0RGANIZATION*

Emory/Atlanta

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
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- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☒ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

9 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE

9 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

7 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

9 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

9 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)
Comments

NRC SUPPORT

9 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)
Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; **Asha Davis:** adavis@nas.edu
but you may upload a scanned **Linda Sligh:** lsligh@nas.edu

signature file below:

Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

Id#

Rev. July 2011

Proj/Act ID#

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Heffron	**Jared**	**D**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution Jared Heffron **Street** PO Box 1279 **City, State Zip** Harpers Ferry, WV 25425	**Home Phone:** 304-924-1802 **Alt. Phone:** 804-840-0559 **Preferred E-mail:** HeffronJared@gmail.com
3) *Today's Date* **1 February, 2013**	*Dates of Tenure* from **16 August, 2010** to **15 March, 2013**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**USAMRIID**	**Bacteriology**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)
Susan Welkos

6) *TITLE OF RESEARCH PROPOSAL*

Development of a new improved anthrax vaccine: Characterization of immune responses to Bacillus anthracis spore antigens and their role in immunity

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Discovered that BenK is an efflux pump protecting vegetative cells from acid stress and present on the spore where it leads to dampened spore germination kinetics through unknown means.

2) BenK was demonstrated to be recognized in bacterial spores by murine macrophages supporting the argument that the protein is immunogenic.

3) SleL, a spore coat protein, was recognized by polyclonal anti-spore antibodies

4) SleL was overexpressed and purified for future studies.

5) D-cycloserine is an effective germination enhancer of the L-alanine mediated germination response and might be utilized for wide-area spore decontamination.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Current research includes generating a novel chimeric protein to allow in vitro analysis of CwlJ, a cortex-lytic enzyme, for the first time in any species known to harbor the cwlJ gene. Analysis of SleL as a potential vaccine candidate is pending.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Heffron J.D., A. L. Jenkins, J. A. Bozue, L. K. Kaatz, C. K. Cote, and S. L. Welkos. Phenotypic Changes in Spores and Vegetative Cells of Bacillus anthracis associated with BenK. Microb. Pathogen. Available online 22 Nov 2012.

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

Jared D. Heffron, Charles L. Marchand, Lynda L. Miller, Stephanie A. Halasahoris, Joel A. Bozue, Susan L. Welkos, and Christopher K. Cote. D-Cycloserine or similar compounds may be uniquely suited for Bacillus anthracis spore decontamination strategies. In preparation.

Christopher Cote, **Jared Heffron,** Joel Bozue, and Susan Welkos. 2014. Bacillus anthracis and other Bacillus species. 2nd Edition Molecular Medical Microbiology. Elsevier. In preparation.

Jared Heffron, Christopher Cote, and Susan Welkos. Alanine and bacterial spores. Alanine: Dietary Sources, Physiological Functions and Health Benefits. NOVA Publishing. In preparation.

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

Heffron, J.D., Kaatz, L., Cote, C., and Welkos, S. "Characterization of a novel spore antigen and potential component of a multi-antigen anthrax vaccine", Bacillus-ACT 2011 conference, Bruges, Belgium (7-11 August 2011).

Domestic

Heffron J.D., A. L. Jenkins, J. A. Bozue, L. K. Kaatz, C. K. Cote, and S. L. Welkos. "Characterization of a novel Bacillus anthracis spore protein and its role in the vegetative cell", NCI Spring Research Festival, Fort Detrick, MD (9-10 May 2012).

Heffron, J.D., Kaatz, L., Cote, C., and Welkos, S. "Characterization of a novel spore antigen and potential component of a multi-antigen anthrax vaccine", DTRA CBD 2011 conference, Las Vegas, NV (14-18 November 2011).

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

Heffron, J.D., Kaatz, L., Cote, C., and Welkos, S. "BenK in the Bacillus anthracis spore and vegetative cell", Hampden-Sydney College, VA (24 September 2012)

Heffron, J.D. "Bacterial spore control the environmentally friendly way", National Cancer Institute, Fort Detrick MD (24 July 2012)

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

14) *POST-TENURE POSITION / JOB TITLE*

Senior Scientist

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Novozymes Biologicals, Inc. 5400 Corporate Circle Salem, VA 24153

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- X Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

7 Development of knowledge, skills, and research productivity

Comments

Initial progress was slower than desired because of the lack of positive results and the delay in gaining access to BSL-3 containment labs. After entry into the lab (after 8 months), then I rapidly added more knowledge and skills to my repertoire. Publishable results followed shortly and the opportunity to write book chapters also markedly increased.

LONG TERM VALUE

7 How the NRC Associateship award affected your career to date

Comments

I think the associateship is what awarded me my next employment position. It gave me an additional three years to learn and master research techniques with bacterial endospores that will be essential for my future work.

LAB SUPPORT

7 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

The USAMRIID Bacteriology Division and especially Susan Welkos' lab group supported me well. Access to equipment was typically effortless and all efforts to ensure as secure of funding as possible were made on my behalf. Safety was a perpetual concern and taken seriously by all staff, and made work easy and comfortable.

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

Susan Welkos went above and beyond what I expected to make sure I had every opportunity to conduct research I wanted to do and ensure that I could be funded. She also did an outstanding job allowing me to work independently, but was always available for consultation when needed.

LPR SUPPORT

8 Quality of administrative support from the Laboratory (e.g., NIST, NRL, IWR, FHWA) NRC Program Representative (LPR)

Comments

Most of the positives for this score come for the LPR. LTC Ingram did an exceptional job keeping all NRC fellows familiar with each other and fostered a community from which we could draw support. He was always willing to stick up for me whenever I needed to push paperwork through the USAMRIID command structure.

NRC SUPPORT

8 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

Gaining access to my coordinator was always easy and he did a great job making sure I was well informed of all aspects of the program. Getting reimbursed for moving expenses was troublesome as expressed in my 6 month evaluation. Insurance coverage was satisfactory for me and my family. Work-related travel was fine with the NRC; it only became difficult when the USAMRIID administration became in involved. I the NRC and USAMRIID should consider compromising on the limitations for NRC fellows' travel every year, so that future confusion does not occur.

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Improvements:

-Coordination on work-related travel policies with host institution

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Maria Crocco: mcrocco@nas.edu
Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Johnston	**Sara**	**C**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Wellington Trace Apartments** Street **4920-B Meridian Way Apt. 17** City, State Zip **Frederick, MD 21703**	**Home Phone: 585-362-9414** **Alt. Phone:** **Preferred E-mail: sara.johnston14@gmail.com**
3) *Today's Date* **April 26, 2012**	*Dates of Tenure* from **March 25, 2009** to **April 30, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
USAMRIID	**Fort Detrick Army Garriso**	**Virology Division**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)
Dr. Arthur Goff

6) *TITLE OF RESEARCH PROPOSAL*

Identification and Characterization of Viral Immunomodulators that Affect the Host Specificity of Orthopoxviruses

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) **MPXV Active Disease Surveillance Program identifying significant increases in prevalence in DRC**

2) **Identification of potential novel therapeutic (IFN-beta) against MPXV**

3) **Identification of MPXV variants actively circulating in the DRC**

4) **In vitro and in vivo evaluation of novel therapeutics against Henipaviruses**

5) **Development and implementation of diagnostic ELISA assays against MPXV**

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Continued efforts associated with MPXV active disease surveillance which are ongoing, in vivo characterization of IFN-beta against MPXV, continued therapeutic testing against Henipaviruses.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) **Publications in peer-reviewed journals**

"In vitro inhibition of monkeypox virus production and spread by Interferon-beta" Sara C Johnston, Kenny L Lin, John H Connor, Gordon Ruthel, Arthur Goff, and Lisa E Hensley: Virology Journal 2012, 9:5

"Assessment of high-throughput screening (HTS) methods for high-consequence pathogens" Brian M Friedrich, Corinne E Scully, Jennifer M Brannan, Monica M Ogg, Sara C Johnston, Lisa E Hensley, Gene G Olinger, and Darci R Smith: Bioterrorism & Biodefense 2011, S3

"Development of a novel nonhuman primate model for Rift Valley Fever" Darci R Smith, Brian H Bird, Bridget Lewis, Sara C Johnston, Sarah McCarthy, Ashley Keeney, Miriam Botto, Ginger Donnelly, Joshua Shamblin, Cesar G Albarino, Stuart T Nichol, and Lisa E Hensley: Journal of Virology 2012, 86(4):2109-2120

"Using remote sensing to map the risk of human monkeypox virus in the Congo basin" Trevon Fuller, Henri A Thomassen, Prime M Mulembakani, Sara C Johnston, James O Lloyd-Smith, Neville K Kisalu, Timothee K Lutete, Seth Blumberg, Joseph N Fair, Nathan D Wolfe, Robert L Shongo, Pierre Formenty, Hermann Meyer, Linda L Wright, Jean-Jacques Muyembe, Wolfgang Buermann, Sassan S Saatchi, Emile Okitolonda, Lisa Hensley, Thomas B Smith, and Anne W Rimoin: EcoHealth 2010, 8(1):14-25

"Major increase in human monkeypox incidence 30 years after smallpox vaccination campaigns cease in the Democratic Republic of Congo" Anne W Rimoin, Prime M Mulembakani, Sara C Johnston, James O Lloyd Smith, Neville K Kisalu, Timothee L Kinkela, Seth Blumberg, Henri A Thomassen, Brian L Pike, Joseph N Fair, Nathan D Wolfe, Robert L

Shongo, Barney S Graham, Pierre Formenty, Emile Okitolonda, Lisa E Hensley, Hermann Meyer, Linda L Wright, and Jean-Jacques Muyembe: PNAS 2010, 107(37):16262-16267

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

- "Risk Factors for Human Monkeypox in the Democratic Republic of the Congo"
Manuscript in Review (Emerging Infectious Diseases).
- "Identification of Genomic Destabilization in Monkeypox Clinical Samples"
Manuscript in Preparation (Science)
- "Pathogen-host Associations and Range Shifts of Human Monkeypox in Response to Climate Change in Central Africa" Manuscript in Preparation (PLOS One).

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

- "A Major Increase in the Incidence of Human Monkeypox Thirty Years After Smallpox Vaccination Campaigns Cease in the Democratic Republic of Congo"
Oral presentation at the 11th Meeting of the WHO Advisory Committee on Variola Virus, Geneva, Switzerland
November 2009

Domestic

- "Human Monkeypox Emergence Since the Cessation of Global Smallpox Vaccination"
Oral presentation at the Pennsylvania Vector Control Association Training Conference,
State College, PA
November 2011
- "Evaluation of Rash Illness in DRC Using Pan-Orthopox, Monkeypox Specific, and VZV Specific Assays"
Poster presentation at the Chemical and Biological Defense Science and Technology Conference, Orlando, FL
November 2010
- "Major Increase in Human Monkeypox Incidence Thirty Years After Smallpox Vaccination Campaigns Cease in the DRC"
Poster presentation at the XVIII International Poxvirus, Asfivirus, and Iridovirus Symposium, Sedona, AZ
June 2010
- "Evaluation of Rash Illness in DRC Using Pan-Orthopox, Monkeypox Specific, and VZV Specific Assays"
Poster presentation at the XVIII International Poxvirus, Asfivirus, and Iridovirus Symposium, Sedona, AZ
June 2010
- "Vaccinia Virus E3L Blocks the Formation of Stress Granule (SG)-Related "Factory Granules" that Inhibit the Replication of a ΔE3L Virus"
Oral presentation at the XVIII International Poxvirus, Asfivirus, and Iridovirus Symposium, Sedona, AZ
June 2010
- "The Actin Motor Myosin V Associates with Intracellular Enveloped Virions"
Oral presentation at the XVIII International Poxvirus, Asfivirus, and Iridovirus Symposium, Sedona, AZ
June 2010
- "Human Monkeypox Genomic Divergence and Determinants of Pathogenesis"
Poster presentation at the 58th annual meeting of the American Society of Tropical Medicine
Washington, DC
November 2009

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* Include dates, names and locations of seminars.

"The Development of Antiviral Strategies to Combat Emerging/Re-Emerging Pathogens"
Oral presentation at Tufts University Cummings School of Veterinary Medicine
North Grafton, MA
April 2012

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

14) *POST-TENURE POSITION / JOB TITLE*

Research Microbiologist 4 contracted through ClinRM

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

USAMRIID, 1425 Porter St. Fort Detrick, MD 21702

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☒ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

9 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE

9 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

9 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

9 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

9 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)
Comments

NRC SUPPORT

9 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)
Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

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Advisers to the Nation on Science, Engineering, and Medicine
National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Langer	**Thomas**	

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Thomas Langer** Street **Via Poerio 15** City, State Zip **20129, Milano, Italy**	**Home Phone:** **Alt. Phone: +39 (320) 780-7868** **Preferred E-mail: tom.langer@hotmail.it**

3) *Today's Date*	*Dates of Tenure*
novembre 15, 2012	from **agosto 28, 2011** to **novembre 23, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**USA ISR**	
(e.g., AFRL)	**(e.g., Wright Patterson AFB)**	**(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Andriy Batchinsky and Leopoldo Cancio

6) *TITLE OF RESEARCH PROPOSAL*

PHYSIOLOGY AND PATHOPHYSIOLOGY OF SPONTANEOUS BREATHING DURING TOTAL EXTRACORPOREAL RESPIRATORY SUPPORT IN HEALTHY SHEEP AND IN SHEEP WITH THE ACUTE RESPIRATORY DISTRESS SYNDROME

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Development of a large animal model to study spontaneous breathing during extracorporeal gas exchange

2) Study of differences in respiratory pattern between healthy animals and animals with the Acute Respiratory Distress Syndrome

3) Development of a new techique for the placement of bicaval dual-lumen catheters for venovenous extracorporeal gas exchange

4) Effects of radiation dose reduction on lung quantitative CT scan results in healthy in the Acute Respiratory Distress Syndrome: low-dose chest CT as a valuable tool for quantification and monitoring of pulmonary disease reducing patient exposure

5)

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Mechanical ventilation (MV) is the current standard of care for the treatment of the acute respiratory distress syndrome. MV can however worsen lung injury. Extracorporeal Gas Exchange is a tempting alternative to treat ARDS. We have established a model to start investigating this treatment option in order to be able to provide, in the future, a safe and succesful treatment to patients with ARDS.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Pressure-guided positioning of bicaval dual-lumen catheters for venovenous extracorpoeral gas exchange. Intensive Care Med. 2012 Nov 17. [Epub ahead of print]

b) Books, book chapters, other publications

0

c) Manuscripts in preparation, manuscripts submitted

Extracorporeal Gas Exchange in awake spontaneously breathing sheep before and after the induction of ARDS - manuscript in preparation
Vecchi V, Langer T, Bellomi M, Rampinelli C, Chung KK, Cancio LC and Batchinsky AI. Ultra Low-dose Quantitative CT: a Monitoring Tool for the Acute Respiratory Distress Syndrome? - manuscript submitted

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

Vecchi V, Langer T, Batchinsky AI, Ivey K, Walker K, Necsoiu C, Belenkiy SM, Dimitri R, Lucas M, Leon A, Salinas J, Cancio LC. Semi-automated Quantitative CT-scan Analysis For In Vivo Lung Weight Measurement. Experimental Biology 2012, San Diego, CA.

Domestic

Vecchi V, Langer T, Batchinsky AI, Ivey K, Walker K, Necsoiu C, Belenkiy SM, Dimitri R, Lucas M, Leon A, Meyers B, Salinas J, Cancio LC. Semi-automated Quantitative CT-scan Analysis For In Vivo Lung Weight Measurement. Military Health System Research Symposium 2012, Ft Lauderdale, Florida.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

0

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

0

14) *POST-TENURE POSITION / JOB TITLE*

Intensice Care Medicine Resident

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Istituto di Anestesia e Rianimazione, Università degli Studi di Milano, Milan, Italy

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
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- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☒ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

8 Development of knowledge, skills, and research productivity
Comments
Great opportunity to develop research skills

LONG TERM VALUE

8 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

7 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

7 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

8 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

NRC SUPPORT

17 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

Really great support. Thank you Jason and Peggy!

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine
National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Leung	**Lai Yee**	

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **(Residence)** Street **11418 Rockville Pike, Apt. 2105** City, State Zip **North Bethesda, MD 20852**	**Home Phone: 3132822198** **Alt. Phone:** **Preferred E-mail: laiyeeleung09@gmail.com**

3) *Today's Date*	*Dates of Tenure*
February 1, 2013	from **February 15, 2010** to **February 15, 2013**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**WRAIR**	**PNS**
(e.g., AFRL)	**(e.g., Wright Patterson AFB)**	**(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Frank Tortella

6) *TITLE OF RESEARCH PROPOSAL*

Characterizing a clinically/militarily relevant rat model of polytrauma associated with penetrating brain injury: neuropathological effects of transient hypotension and/or acute hypoxemia after penetrating ballistic-like brain injury (PBBI)

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Established polytrauma models associated with hypoxemia and hemorrhagic hypotension that will be used for future neuroprotective drug studies.

2) Acute physiological changes were characterized in the polytrauma models. The patterns of these changes were found to be unique under different injury combinations.

3) Hemorrhagic shock increased the incidence and duration of cortical spreading depolarization within 2 hours following PBBI whereas hypoxemia only prolonged the depolarization.

4) Histopathological changes were characterized (3, 7 days post-injury) in the polytrauma models. Hemorrhagic shock increased neuronal degeneration and astrocytic activation following PBBI.

5) The sequence of PBBI, hemorrhagic hypotension and hypoxemia affected the mortality rate and neurological deficits. PBBI, HS followed by HX resulted in the highest mortality rate (50%) and more neurological deficits among all polytrauma groups.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Part of the histopathological characterization is underway. Brain samples collected following the different sequences of polytrauma are being processed for immunostaining. The quantifications of histopathological changes will be performed in these immunotained brain slices. The behavioral and EEG studies in the polytrauma models will soon be started. I have submitted a core funding proposal (FY14-18) as a principal investigator to Combat Casualty Care Research Program of MRMC to continue the research efforts on polytrauma. The proposal aims at investigating the effects of polytrauma on protein biomarkers, the vital organs, etc. as well as polytrauma associated with mild TBI.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Chen Z*, Leung LY*, Mountney A, Liao Z, Yang W, Lu XC, Dave JR, Deng-Bryant Y, Wei G, Schmid K, Shear DA, Tortella FC. A novel animal model of closed-head concussive-induced mild traumatic brain injury: development, implementation and characterization. J Neurotrauma. 2012 Jan 20;29(2):268-80. (*Co-first authors)

Murakami Y, Wei G, Yang X, Lu XC, Leung LY, Shear DA, Tortella FC. Brain oxygen tension monitoring following penetrating ballistic-like brain injury in rats. J Neurosci Methods. 2012 Jan 15;203(1):115-21.

Mountney A*, Leung LY*, Pedersen R, Shear DA, Tortella FC. Longitudinal assessment of gait abnormalities following penetrating ballistic-like brain injury in rats. J Neurosci Methods. 2013 Jan 15, 212(1): 1–16. (*Co-first authors)

Leung LY, Wei G, Shear DA, Tortella FC. The acute effect of hemorrhagic shock on cerebral blood flow, brain tissue oxygen tension and spreading depolarization following penetrating ballistic-like brain injury. Journal of Neurotrauma. (Final revision)

Lu XCM, Mountney A, Chen Z, Wei G, Leung LY, Cao Y, Khatri V, Cunningham T, Tortella FC. Similarities and differences of acute non-convulsive epileptic activities following penetrating and ischemic brain injury in rats. Journal of Neurotrauma. (In Press)

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

Leung LY, Wei G, Shear DA, Tortella FC. Temporal and Spatial Profile of Histopathological Changes Caused by Hemorrhagic Shock in a Rat Model of Penetrating Ballistic-like Brain Injury (PBBI). (In preparation)

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

N/A

Domestic

Leung LY, Wei G, Shear DA, Tortella FC. Acute effect of transient hypoxemia on cerebral blood flow, brain tissue oxygen tension and direct-current electroencephalography following penetrating ballistic-like brain injury. Society for Neuroscience 2012. New Orleans, Louisiana, USA. 2012.

Leung LY, Wei G, Shear DA, Tortella FC. Characterization of a military-televant polytrauma model: combined effects of penetrating ballistic-like brain injury and hemorrhagic shock or hypoxemia. Military Health System Research Symposium 2012. Fort Lauderdale, Florida. 2012.

Leung LY, Larimore Z, Holmes L, McLoughlin S, Mountney A, Schmid K, Shear DA, Tortella FC. WRAIR Projectile Concussive Impact (PCI) model: injury device and helmet advanced development. Military Health System Research Symposium 2012. Fort Lauderdale, Florida. 2012. (Oral Presentation)

Leung LY, McLoughlin S, Wei G, Shear DA, Tortella FC. Temporal and spatial profile of histopathological changes caused by hemorrhagic shock after penetrating ballistic-like brain injury (PBBI). National Neurotrauma Symposium 2012. Phoenix, Arizona, USA. July 2012.

Leung LY, Wei G, Khatri V, Shear DA, Tortella FC. Development of a military-relevant polytrauma model: combined effects of penetrating ballistic-like brain injury and hemorrhagic hypotension in rats. National Neurotrauma Symposium 2011. Hollywood, Florida, USA. July 2011.

Leung LY, Chen Z, Liao Z, Lu X, Dave J, Wei G, Yang W, Schmid K, Shear DA, Tortella FC. The WRAIR Model of Projectile Concussive Impact (PCI): I. Device development. National Neurotrauma Symposium 2011. Hollywood, Florida, USA. July 2011.

Leung LY, Wei G, Khatri V, Shear DA, Tortella FC. Effects of hypotension on spreading depolarization in the rat penetrating ballistic-like brain injury model. National Capital Region Traumatic Brain Injury Research Symposium 2011. Gaithersburg, Maryland, USA. April 2011. (Oral Presentation)

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* Include dates, names and locations of seminars.

8 November, 2011. CNS Injury Conference, hosted by Center for Brain Injury and Repair, University of Pennsylvania.

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

N/A

14) *POST-TENURE POSITION / JOB TITLE*

Neurobiologist

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Walter Reed Army Institute of Research
503 Robert Grant Avenue, 2W12
Silver Spring, Maryland

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☒ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center WRAIR/MRMC
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE
10 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE
10 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT
10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT
10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT
10 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)
Comments

NRC SUPPORT
10 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)
Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine
National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
McCoy	**Margaret**	**E**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Residence** Street **12804 Powderhorn St.** City, State Zip **Austin, TX 78727**	**Home Phone: 804-869-8486** **Alt. Phone: N/A** **Preferred E-mail: mccoyme2@vcu.edu**

3) *Today's Date*	*Dates of Tenure*
September 4, 2012	from **July 29, 2012** to **October 4, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
WRAIR	**David E. Lanar**	**Malaria Vaccine Branch**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

David. E. Lanar **N/A**

6) *TITLE OF RESEARCH PROPOSAL*

Examination of immune responses and efficacy in mouse and Rhesus animal models of a circumsporozoite proteine (CSP)-based Self-Assembling Polypeptide Nanoparticle (SAPN) malaria vaccine.

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Identified the mechanism of action of SAPN-induced Ab that provides sterile immunity in mice

2) designed and carried out experiments to examine and characterize the processing and presentation of SAPN within the immune system

3) Examined the phenotypes of SAPN-specific T-cell populations and proved that CD8+ T-cells from mice immunized with SAPN are able to, by themselves, induce sterile immunity in mice- this is the first malaria vaccine to be able to show this.

4) Examined needleless approcahes to vaccine delivery, including pleuronic lecithin organogel creams

5) Identified potential effects on vaccine efficacy resulting from the addition of mosquito saliva

6) The youngest investigator at the WRAIR to successfully write and complete a non-human primate trial for malaria

(USMA Davies Fellow: please add summary of teaching, including classes taught.)
N/A

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

I have successfully completed all of my murine and Rhesus experiments with only minor finishing touches to be wrapped up.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

1) Protective antibody and CD8+ T-cell responses to the Plasmodium falciparum protein induced by a polypeptide nanoparticle vaccine. Stephen Kaba, Margaret E. McCoy, Tais Doll, Peter Burkhard, Qin Guo, Debleena Dasgupta, Yongkun Yang, Christian Mittelholzer, Roberta Spaccapelo, Andrea Crisanti, and David E. Lanar. in press PLoS ONE September 2012

b) Books, book chapters, other publications

N/A

c) Manuscripts in preparation, manuscripts submitted

1) Mechanisms of protective responses induced by the Plasmodium falciparum CSP-based self-assembling polypeptide nanoparticle vaccine. Margaret E. McCoy, Hannah Golden, Tais Doll, Yongkun Yang, Stephen Kaba, Peter Burkhard, and David E. Lanar. In submission Vaccine 2012

2) Protection efficacy of a self-assembling polypeptide nanoparticle targeting the Plasmodium falciparum circumsporozoite protein in non-human primates. Margaret E. McCoy, Hannah E. Golden, Stephen Kaba, Qin Guo, Debleena Dasgupta and David E. Lanar. In preparation 2012.

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

1) A nonadjuvanted self-assembling polypeptide nanoparticle vaccine induces a CD8+ T-cell response: Implications for a robust cellular response to malaria; Margaret E. McCoy, C Brando, SA Kaba, Q Guo, D Dasgupta, C Mittelholzer, TAPF Pimentael, Y Yang, P Burkhard and D Lanar. AAI 14th Annual International Congress of Immunology. Kobe, Japan. August 22-27 2010.

Domestic

1) Cross-presentation of exogenous peptides delivered in self-assembling polypeptide nanaoparticles: Implications for malaria vaccine development; Margaret E. McCoy and David E. Lanar. WRAIR, Young Investigator's Meeting. Silver Spring, MD. September 2009.
2) A nonadjuvanted self-assembling polypeptide nanoaprtice vaccine induces a CD8+ T-cell response: Implications for a robust cellular response to malaria. Margaret E. McCoy, C Brando, S Kaba, Q Guo, D Dasgupta, C Mittelholzer, TAPF Pimentel, P burkhard and D Lanar. National Foundation for Infectious Diseases 13th Annual Conference on Vaccine Research. Bethesda, MD. April 26-28 2010.
3) A self-assembling polypeptide nanoparticle vaccine is able to induce Ag-specific CD8+ T-cell responses: Implications for a multi-functional vaccine for malaria. Margaret E. McCoy, S Kaba, Q Guo, D Dasgupta, C Mittelholzer, TAPF Pimentel, Y Yang, P Burkhard and C Brando. FASEB src, Biology of the Immune System. Carefree, AZ. June 20-25 2010.
4) Mechanisms and ancillary modifications to delivery of a nonadjuvanted self-assembling polypeptide nanoparticle vaccine for malaria. Hannah Golden, M McCoy, C Brando, S Kaba, Q Guo, D Dasgupta, C Mittelholzer, TAPF Pimentel, Y Yang, EE Carroll, P Burkhard and D Lanar. WRAIR Student Research Symposium, Silver SPring, MD. July 2010.
5) Mechanisms and ancillary modifications to delivery of a nonadjuvanted self-assembling polypeptide nanoparticle vaccine for malaria. Hannah Golden, M McCoy, C Brando, S Kaba, Q Guo, D Dasgupta, C Mittelholzer, TAPF Pimentel, Y Yang, EE Carroll, P Burkhard and D Lanar. WRAIR World Malaria Day, Silver SPring, MD. April 2011.
6) A nanoparticle vaccine targeting plasmodium falciparum circumsporozoite protein confers protective humoral and cellular immunity; Margaret E. McCoy, SA Kaba, Q Guo, D Dasgupta, TAPF Doll, Y Yang, C Mittelholzer, R Spaccapelo, A Crisanti, P Burkhard and D Lanar. 61st Annual Meeting, ASTMH, Philadelphia, PA. December 4-8 2011.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

1) Lectured at Blari High School, Silver Spring, MD 2011 and 2012
2) Lectured at Bishop O'Connell High School, Arlington, VA 2011

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

1) Young Investigator Award, 2nd runner-up, ASTMH December 2011
2) The Maurice R. Hilleman Early Stage Career Investigator Award, Runner-up, the National Foundation for Infectious Diseases, April 27, 2010

14) *POST-TENURE POSITION / JOB TITLE*

Law student, the University of Texas at Austin

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Austin, TX

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☒ Other **(Please specify, possible)** Law School

☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

[10] Development of knowledge, skills, and research productivity

Comments

This position has truly expanded my knowledge, experience and research focusing abilities.

LONG TERM VALUE

[10] How the NRC Associateship award affected your career to date

Comments

This fellowship has set me apart and provided me with an outstanding base from which to launch the next phase of my career.

LAB SUPPORT

[10] Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

Dr. Lanar financially supported me in more than one endeavour of mine in the lab and has encouraged my idependant thoughts on experimental designs and writing.

ADVISER/MENTOR SUPPORT

[10] Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

Dr. Lanar financially supported me in more than one endeavour of mine in the lab and has encouraged my idependant thoughts on experimental designs and writing

LPR SUPPORT

[10] Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

This position just recently changed hands, but I have to say that Dr. Sara Rothman is the most amazing mentor and support for all of us. She is an icon and a role model to which any after her can only desire to imitate.

NRC SUPPORT

[8] Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

I had several major issues with payroll. Omegatravel and Jason and his crew (Ms. Winstead included) have been wonderful and very helpful whenever I needed their assiatance!!

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

N/A

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Meledeo	**Michael**	**A**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Residence** Street **20610 Gathering Oak** City, State Zip **San Antonio, TX 78258**	**Home Phone: 210-643-2385** **Alt. Phone:** **Preferred E-mail: meledeo@gmail.com**

3) *Today's Date*	*Dates of Tenure*
July 6, 2012	from **March 1, 2010** to **July 6, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**ISR**	**Damage Control Resuscitation**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Bowman Philip

6) *TITLE OF RESEARCH PROPOSAL*

A strategy for the control of acute coagulopathy of trauma

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Aptamers can be used to completely inhibit the anti-coagulant effects of activated protein C (aPC); however, aPC does not appear to be the sole sufficient cause of the acute coagulopathy of trauma.

2) Exposing in vitro cultures of endothelial cells (ECs) to laminar flow (as a model of their physiological environment) will induce a number of changes to both EC morphology and gene expression in a variety of inflammatory and morphology pathways.

3) While not all of the changes in gene expression result in an altered proteome, there are a number of significant differences in protein expression between static cultured ECs and those exposed to flow.

4) An analysis of the EC glycocalyx through confocal microscopy and western blotting of membrane proteins and associated glycoforms has led to an enhanced understanding of the structure and function of the endothelial glycocalyx layer.

5) All of these have provided advancement in the formulation of in vitro models of endothelium; in the future it should be possible to use these models as a platform for the testing of both therapeutics and diagnostics for vascular dysfunction.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

n/a

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

The research in progress will continue over the next few months since I will be working just down the hall from my NRC position. This includes a more thorough analysis of the proteomic effects of laminar flow on the endothelial cells through a small grant with the UTSA Proteomics Core. There is a little more work to be done with the confocal analysis of ECs particularly in a time course study of the formation of the EGL. Finally, only recently has the method for isolating and concentrating the membrane proteins for the purposes of identifying enhancement or inhibition of EGL members; more work can quickly be completed on identifying the affected members through western blotting.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Bowman PD, Wang X, Meledeo MA, Dubick MA, Kheirabadi BS. Toxicity of aluminum silicates used in hemostatic dressings toward human umbilical vein endothelial cells, HeLa cells, and RAW267.4 mouse macrophages. J Trauma. 2011 Sep;71(3):727-32.

b) Books, book chapters, other publications

n/a

c) Manuscripts in preparation, manuscripts submitted

M. A. Meledeo, J. A. Bynum, J.L. Sondeen, P.D. Bowman. Characterization of the Human Umbilical Vein Endothelial Cell Glycocalyx. In preparation for submission to Amer J Phys Cell.

M. A. Meledeo, J. A. Bynum, J.L. Sondeen, P.D. Bowman. Effects of Unidirectional Laminar Flow on Human Umbilical Vein and Human Dermal Microvascular Endothelial Cell Glycocalyx. In preparation.

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

Bowman PD, Meledeo MA, Campbell JE. Tissue factor-coated, biocompatible, resorbable materials for control of severe bleeding. Provisional patent application, MRMC temporary ID: ISR 11-10. Submitted Jun 1, 2011.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

n/a

Domestic

Meledeo MA, Bynum JA, Sondeen JL, Bowman PD. Endothelial cell responses to laminar flow: changes in gene expression, protein, and glycocalyx. FASEB J. 2012 Mar 29; 26:1129.10. Experimental Biology 2012 conference.
Bowman PD, Bynum JA, Craig T, Meledeo MA, Darlington DT. Temporal gene expression profiling of the hypothalamus following trauma. FASEB J. 2012 Mar 29; 26:lb673. Experimental Biology 2012 conference.
Meledeo MA, Campbell JE, Bowman PD. Development of an in vitro model of the acute coagulopathy of trauma. ATACCC 2011 conference.
Meledeo MA, Campbell JE, Bowman PD. Development of an in vitro model of the acute coagulopathy of trauma. FASEB J. 2011 Mar 17; 25:616.20. Experimental Biology 2011 conference.
Meledeo MA, Bynum JA, Sondeen JL, Prince MD, Bowman PD. Investigation of genes mediating the response of human endothelial cells to steady-state laminar flow. FASEB J. 2011 Mar 17; 25:662.1. Experimental Biology 2011 conference.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

Meledeo MA. The role of the glycocalyx and laminar flow in maintenance of human endothelial cell function in vitro. United States Army Institute of Surgical Research scientific seminar series. 2012 May 9.

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

DMRDP FY2010 award. Proposal title: Application of Aptamer Technology for Identification and Control of the Acute Coagulopathy of Trauma, P.I. Michael Adam Meledeo, US Army Institute of Surgical Research. D61_I_10_J6_202. Award value: $118,000.

14) *POST-TENURE POSITION / JOB TITLE*

Staff Scientist, Contractor with Cherokee Nation Tech.

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

USAISR Blood Research Group
3650 Chambers Pass, Bldg 3610
Ft. Sam Houston, TX 78234

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☒ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ISR
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

7 Development of knowledge, skills, and research productivity

Comments

I used many things I already knew how to do in this associateship, but I did have the opportunity to learn more about WHY we do the things we do; additionally, I had the opportunity to learn several new things. Productivity was not consistently stressed.

LONG TERM VALUE

☒ How the NRC Associateship award affected your career to date

Comments

Although from a scientific performance metric (that being the number of publications produced), this position was not as good for my career as it could have been (a large part of that was my own fault), it did afford me the opportunity to show my skills and efforts to others in the host institute. This directly led to my new position, and hopefully to further career advancement in the future.

LAB SUPPORT

☒ Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

Equipment and funding are unsurpased in my experience. We had everything we needed. Safety and irrelevant training were overstressed, which is not surprising considering that those programs have to be tailored to the least common denominator.

ADVISER/MENTOR SUPPORT

☒ Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

Dr. Bowman is one of the most knowledgable people I've ever known, and he was an invaluable resource for any questions I had. He taught me a great deal about the research subjects on which I was working. My only complaints are that his expectations for my work were rarely known to me.

LPR SUPPORT

☒ Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

Dr. Dubick was not frequently needed or seen. He did travel a lot which made it difficult to find him, although that was a rare necessity.

NRC SUPPORT

☒ Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

Administrative support was excellent. I had several problems with the travel group, but I understand that there was a lot of turmoil in that department with various people covering roles while some were out on leave. Everything worked out in the end.

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

My primary suggestion would be to identify to both the mentors and the associates what the NRC's expectations are for roles and performance markers. I had certain expectations (my own problem) which were not met, and by the time I realized that they were not going to be met, I felt like it was too late to say anything to anyone about it.

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Melendrez	**Melanie**	**C**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Wentworth House Apartments** Street **5411 McGrath Blvd. Unit 1403** City, State Zip **North Bethesda, MD 20852**	**Home Phone: 8082859949** **Alt. Phone: 8082859949** **Preferred E-mail: mmelendrez@gmail.com**

3) *Today's Date*	*Dates of Tenure*
May 1, 2012	from **March 22, 2010** to **May 15, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**WRAIR**	**AFRIMS, Bangkok**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Jarman **Richard G.**

6) *TITLE OF RESEARCH PROPOSAL*

Dengue Virus Quasispecies' role in Viral Fitness and Adaptation to Changing Environments

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Variants analysis of dengue quasispecies populations showed that variants are host or vector specific despite containing the same consensus sequence. Diversity was found to not be constrained within the vector as suggested in some publications.

2) Selection analysis showed the populations to be expanding, evolving at a faster rate than 'average' for the dataset, and were under selective pressure with a predominance of nonsynonymous mutations when compared with the consensus sequence.

3) Phylogenetic analysis revealed that dengue quasispecies sequences isolated in 2010 were distinct from other ciruclating consensus sequences from Thailand and full E gene offered higher resolution than partial E gene sequences.

4) Amino acid (aa) analysis suggested several positions where changes would affect replication, antibody binding or VLP assembly according to the literature. Multivariate analysis predicted uncharacterized aa positions that would have impact if altered.

5) This work revealed the importance of full E gene surveillance for assessment of aa changes, illustrated the variability and pathogenic potential of dengue quasispecies variant diversity and established a baseline in which to make future comparisons.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Future work will focus on analyzing quasispecies population dynamics over the course of an in vitro transmission cycle and characterizing changes within the population during the course of fever prior to defervescence. The merits of using cloning versus next generation sequencing technologies to assist in both of these projects will also be assessed.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Conlan, J.V.; R.G. Jarman, K. Vongway, P. Chinnawirotpisan, M.C. Melendrez, S. Fenwick, R.C.A. Thompson and S.D. Blacksell. 2011. Hepatitis E virus is prevalent in the pig population of Lao People's Democratic Republic and evidence exists for homogenetiy with Chinese genotype 4 human isolates. Infection, Genetics and Evolution. 11: 1306-1311.

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

Melendrez, M.C.; P. Chinnawiropisan, A. Ponlawat, C. Klungthong, S.J. Thomas, R.V. Gibbons, A.L. Rothman, T.P. Endy, I-K. Yoon, T.W. Scott, J.H. Richardson and R.G. Jarman. 2012. Quasispecies variant analysis of a 2010 dengue 3 virus from Kamphaeng Phet, Thailand. In preparation.

Melendrez, M.C.; R.G. Jarman, C. Klungthon, P. Chinnawiropisan and R.V. Gibbons. 2012. Molecular evolution of pandemic influenza A virus (pH1N1) in Nepal 2009-2010. In preparation.

Takhampunya, R.; A. Kengluecha, T. Monkanna, A. Korkusol, S. Leepitakrat, B. Tippayachai, M.C. Melendrez, B.P. Evans and J.H. Richardson. 2012. Characterization of Orientia tsutsumagushi strains isolated from Leptotrombidium mites and the rodent host post-transmission. In revision.

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

MC Melendrez, P Chinnawiropisan, A Ponlawat, C Klungthong, SJ Thomas, RV Gibbons, AL Rothman, TP Endy, I-K Yoon, TW Scott, JH Richardson and RG Jarman. Quasispecies variant analysis of a 2010 dengue 3 virus from Kamphaeng Phet, Thailand. Poster Presentation. American Society of Tropical Medicine and Hygiene, Philadelphia, PA, USA. December 2011.

Domestic

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

MC Melendrez. April 26, 2012. Infectious Disease Bioinformatics: Tinker, Tailor, Soldier, Spy. USAMC-AFRIMS, Bangkok, CPB Building Room 503.

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

14) *POST-TENURE POSITION / JOB TITLE*

Bioinformatics Supervisor

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Walter Reed Army Institute of Research-Viral Diseases Branch. Robert Grant Ave. Silver Spring, MD

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☒ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
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- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity
Comments
AFRIMS, Bangkok provided many opportunities for learning about several infectious diseases important in SE Asia. I was able to observe and participate in methodologies associated with serology (viral culturing), molecular biology (sequencing and various PCR methodologies) and field collection of mosquitoes, training provided by the Entomology Dept. at AFRIMS. The organization encouraged collaboration and laboratory space was readily available my project along with any supplies I required.

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

Having come from an environmental microbiology background with minimal training in infectious disease, tenure with NRC has encouraged me to continue in infectious disease ecology and bioinformatic analysis. It has opened opportunities for me to continue in these fields and continue working and developing under my mentors.

LAB SUPPORT

10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

All protocols were clearly communicated and training was provided in English whenever required. Department personnel assisted me in locating and obtaining any supplies or equipment I needed for my work and clearing lab space.

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

Correspondence was always prompt and helpful.

LPR SUPPORT

10 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

Correspondence was always prompt and helpful.

NRC SUPPORT

9 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

Omega travel was very helpful with all travel arrangements. See comments below about issues pertaining to being an internationally placed postdoc.

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

There is not much support or guidance for internationally placed NRC postdocs except the coverage of my plane ticket. Aetna insurance also does not provide very much international support. Upon arriving to Bangkok there was no point of contact to assist in making our transition smooth. I was fortunate to have the support of the Virology secretary who served that role when I asked her to. There also was not much guidance for moving abroad specifically, I am now serving as a resource for some new NRC postdocs applying to the program as to how logistically to make moving to Bangkok Thailand feasible with respect to visas, housing, APO address, medical care, communications with NRC etc. If NRC is unable to provide this kind of abroad logistical support and the supporting agency where the fellow will work does not have this understanding to provide a point of contact for the fellow when they arrive, then the transition is challenging. Please feel free to post me as a resource to postdoctoral fellows with NRC that will be relocating abroad. I would be willing to give them information on the logistics of relocating to Thailand and advice on being an 'abroad' postdoc in general.

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Mountney	**Andrea**	

2) *FORWARDING Address* **(to which your tax statement will be mailed)**	*FORWARDING Phone(s) and E-Mail* **(if known)**
Residence or Institution **Street 1705 East West Highway, Apt 608** **City, State Zip : Silver Spring, MD, 20910**	**Home Phone:** 410-215-9236 **Alt. Phone:** **Preferred E-mail: amountn1@gmail.com**
3) *Today's Date* **20FEB2012**	*Dates of Tenure* from **15NOV2010** to **28FEB2013**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**WRAIR**	**Psychiatry and Neuroscience**
(e.g., AFRL)	**(e.g., Wright Patterson AFB)**	**(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* **(and USMA Mentor, if applicable)**
Dr. Frank Tortella

6) *TITLE OF RESEARCH PROPOSAL*

Assessment of Anti-epileptic Drugs (AED) to attenuate nonconvulsive seizures (NCS) following traumatic brain injury (TBI)

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Traumatic brain injury (TBI) results in post-traumatic nonconvulsive seizures (NCS) that are more refractory to traditional anti-epileptic drugs (AED). Our rodent penetrating ballistic-like brain injury (PBBI) model results in reproducible NCS. This proposal was to identify effective drugs/combination of drugs to treat NCS using systematic dose-response evaluation of carefully selected anti-epileptic drugs.

2) *Completion of monotherapy dose-response profiles (traditional AED)*: ethosuximide and phenytoin, used to treat absence epilepsy or tonic/clonic seizures, respectively, were found to significantly attenuate NCS incidence, frequency, duration and delay onset latency (2 drugs, 5 doses/drug, 15 rats/dose)

3) *Completion of monotherapy dose-response profiles (non-traditional AED):* gabapentin and levetiracetam, were also found to attenuate NCS in our TBI model (2 drugs, 5 doses/drug, 15 rats/dose)

4) *Combination therapy:* fixed-dose ratios of phenytoin and ethosuximide combination therapy were determined using isobolographic analysis.

5) NCS in our PBBI model show similarities and differences with spontaneously occurring NCS from a rodent stroke model.

(USMA Davies Fellow: please add summary of teaching, including classes taught.)
N/A

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Current studies investigating the therapeutic benefit of combination AED therapies to target NCS following rodent TBI are underway. Using isoboligraphic analysis, promising AEDs from the monotherapy studies (e.g. ethosuximide and phenytoin) will be combined in fixed-ratio combinations in order to assess potential additive or synergistic effects. Drug efficacy will be assessed based on the ability of the combination to significantly reduce seizure incidence, frequency, duration, and increase onset.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

Xi-Chun M Lu, Andrea Mountney, Zhiyong Chen, Guo Wei, Lai Yee Leung, Ying Cao, Vivek Khatri, Tracy Cunningham, and Frank C Tortella. Similarities and Differences of Acute Nonconvulsive Seizures and Other Epileptic Activities Following Penetrating and Ischemic Brain Injuries in Rats. *Journal of Neurotrauma.* 2012. Online ahead of print.

b) Books, book chapters, other publications

N/A

c) Manuscripts in preparation, manuscripts submitted

Andrea Mountney, Deborah A. Shear , Brittney Potter, Sean R. Marcsisin, Jason Sousa, Victor Melendez, Frank C. Tortella, and Xi-Chun M. Lu. "Ethosuximide and phenytoin dose-dependently attenuate nonconvulsive seizures following traumatic brain injury in rats". *Journal of Pharamocolgy and Experimental Theraputics*. 2013 Submitted.

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

N/A

Domestic

Invited Speaker, "Dose-response profiles of phenytoin and ethosuximide on nonconvulsive seizures following traumatic brain injury." The Military Health System Research Symposium (MHSRS). Fort Lauderdale, FL. August 2012.

Invited Speaker, "Ethosuximide dose-dependently attenuates nonconvulsive seizures in a military-relevant model of traumatic brain injury." Souderton-Telford Rotary Club. Telford, PA. April 2012.

Abstracts

Mountney A, Lu XCM, Yang W, Cao Y, Shear DA, Tortella FC (2012). Ethosuximide dose-dependently attenuated nonconvulsive seizures induced by penetrating ballistic-like brain injury in rats. 30th Annual Neurotrauma Symposium in Phoenix, AZ.

Lu M, Chen Z, Wei G, Cao Y, Leung L, Cunningham T, Khatri V, Mountney A, Shear D, Tortella FC, (2011) "Dose-response effects of phenytoin on attenuation of nonconvulsive seizures caused by penetrating ballistic-like brain injury in rats." The Journal of Neurotrauma 28:A-1-A134. June 2011.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

N/A

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

National Neurotrauma Young Investigator's Award, July 2012

14) *POST-TENURE POSITION / JOB TITLE*

U.S. Army Officer, Medical Service Corps.

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Walter Reed Army Institute of Research, 503 Robert Grant Ave, Silver Spring, MD 20910

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☒ Other **(Please specify, possible)** **Military**
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity
Comments
I learned additional surgical and behavioral testing techniques

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

Without this NRC, I would have never considering applying for a position in the US. Army.

LAB SUPPORT

10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

The lab is well funded and allows NRCs to conduct research with reasonable budget constraints.

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

LPR SUPPORT

10 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

NRC SUPPORT

10 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Additional information regarding guides for leave/vacation policy would be helpful.

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required;
but you may upload a scanned
signature file below:

Maria Crocco: mcrocco@nas.edu
Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Pichugin	**Alexander**	**V**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **residence** Street **2445 Lyttonsville Rd Apt 1117** City, State Zip **Silver Spring, MD 20910**	Home Phone: **301-710-0417** Alt. Phone: **301-319-9039** Preferred E-mail: **a.pichugin@verizon.net**

3) *Today's Date*	*Dates of Tenure*
July 6, 2012	from **January 12, 2009** to **July 11, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**WRAIR**	**Malaria Vaccine Branch**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Dr. Urszula Krzych

6) *TITLE OF RESEARCH PROPOSAL*

Prioritization and selection of pre-erythrocytic liver stage Plasmodia antigens as vaccine candidates.

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) **10 novel liver stage Pb antigens reduce LS and BS parasite burden in C57Bl/6 mice.**

2) **3 novel liver stage Pb antigens sustain protection during 6 months after the last immunization.**

3) **3 novel liver stage Pb antigens enhance protection induced by PbCSP.**

4) **Established caged MHC-tetramer technology to use for discovery of T cell epitopes in malaria antigens.**

5) **Identified 3 immunodominant CD8 T cell epitopes from Pb PEVA.**

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

We showed that ten of 23 initial Pb DNA constructs induce the protection in C57Bl/6 mice after IM and Gene Gun delivery and subsequent challenge with P. berghei. Six orthologues of ten protective in P. berghei model antigens were also protective in P. yoelii-BALB/c model.

We have established novel state-of-art high throughput method of caged MHC-tetramers to evaluate frequency of peptide-specific CD8 T cells in mice protected by GAP and RAS. We have screened ~400 of Kb- and Db-restricted CD8 peptides from 28 initial Pb antigens and determined three immunodominant epitopes on two protective vaccine candidates.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) **Publications in peer-reviewed journals**

Anjali Yadava, Saule Nurmukhambetova, Alexander V Pichugin, Joanne M Lumsden "Cross-Species Immunity Following Immunization with a Circumsporozoite Protein-Based Vaccine for Malaria" J Infect Dis. 2012, 205(9):1456-63.

b) **Books, book chapters, other publications**

c) **Manuscripts in preparation, manuscripts submitted**

"Early Liver Stage Transcriptome of Plasmodium falciparum Reveals Novel Malaria Vaccine Candidates", in preparation

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide titles, inventors, and dates of applications.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*

Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

Alexander V. Pichugin, Lindsey Ehrler, Sharvan Sehrawat, Cate Speake, Patrick Duffy, Hidde Ploegh, Urszula Krzych "Application of novel caged MHC-tetramer technology for the discovery of immunodominant CD8 T cell epitopes on Plasmodium liver stage antigens" 99th Annual Meeting of the American Association of Immunologists "Immunology 2012". Boston, MA, USA, May 4-8, 2012, abstract 1336683, poster presentation.

Alexander V. Pichugin, Cate Speake, Lindsey Ehrler, Lindsay Holladay, Valentino Garcia, Bob Morrison, Patricia DeLaVega, Isaac Chalom, D. Gray Heppner, Patrick Duffy and Urszula Krzych "Novel Plasmodium berghei pre-erythrocytic liver stage antigens as potential vaccine candidates" Keystone Symposia: Malaria: New Approaches to Understanding Host-Parasite Interactions. Cooper Mountain, Colorado, USA, April 11-16, 2010, abstract 231, poster presentation.

Domestic

Alexander V. Pichugin, Stasya zarling, Lindsey Ehrler, Sharvan Sehrawat, Cate Speake, Patrick Duffy, Hidde Ploegh, Urszula Krzych "Identification of Plasmodiun berghei novel liver stage CD8 T cell epitopes by caged MHC class I tetramer technology" 2012 World Malaria Day, Johns Hopkins Malaria Research Institute. Baltimore, MD, USA, April 25, 2012, abstract 26, poster presentation.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

14) *POST-TENURE POSITION / JOB TITLE*

Senior Immunologist

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Clinical Research Management
411 Aviation Way Ste. 220
Frederick, MD 21701

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☒ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center WRAIR
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

☐ Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

☐ Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)
Comments

NRC SUPPORT

☐ Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)
Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Alexander Pichugin

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Rajendran	**Gnana**	**R**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Residence** Street **12215 Emerald Way** City, State Zip **Germantown, MD 20876**	**Home Phone: 301-528-6952** **Alt. Phone: 240-938-0944** **Preferred E-mail: gnanaravi@hotmail.com**

3) *Today's Date*	*Dates of Tenure*
September 4, 2012	from **September 7, 2010** to **August 31, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**WRAIR**	**ET**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

WRAIR **Dr. Michael Kozar**

6) *TITLE OF RESEARCH PROPOSAL*

Design and synthesis of decaquinate derivatives toward new antimalarial agents

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Several compounds were synthesized by the SAR of DQ and submitted for in vitro testing against blood stage malaria, specifically P.falciparum D6, W2, C235 and C2B strains, and assessed for metabolic stability in the mouse and human microsomes

2) In many cases the compounds solubility was improved but the compounds either lost potency against the C2B resistant strain of malaria or microsomal stability

3) A few interesting trends were discovered. An unprecedented ester replacement, to the ethyl or morpholine amide was discovered that maintained potency against D6,W2,C235 but unfortunately lost activity against the key C2B atovaquone resistant strain

4) Additionally, many compounds were synthesized that maintained in vitro potency with significantly lower clogP (main focus of the research effort)

5) Efforts are currently toward acquiring a complete set of data to select profile compounds to be scaled up and tested in in vivo models

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Please see the attached document

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide titles, inventors, and dates of applications.

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*

Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

Domestic

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

14) *POST-TENURE POSITION / JOB TITLE*

Scientist

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

WRAIR, 503 Robert Grant Ave, Silver Spring, MD

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

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- ☒ Contract or temporary position at the NRC host Agency
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- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

10 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)
Comments

NRC SUPPORT

10 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)
Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Torres	**Luciana**	**N**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Residence** Street **23015 Airedale Lane** City, State Zip **San Antonio, TX 78260**	**Home Phone: 210-560-2855** **Alt. Phone: 210-460-9745** **Preferred E-mail: luciana.n.torres.ctr@us.army.mil**

3) *Today's Date*	*Dates of Tenure*
October 18, 2012	from **May 18, 2011** to **July 30, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
USAMMC	**AISR**	**Damage Control and Resuscitation**
(e.g., AFRL)	(e.g., Wright Patterson AFB)	(e.g., High-Speed Propulsion)

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Dr. Michael Dubick

6) *TITLE OF RESEARCH PROPOSAL*

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Intravital Microscopy was successfully employed for investigating EG shedding in hemorrhagic shock/resuscitation for the very first time;

2) Intravital microscopy integrated with systemic hemodynamics evaluations may be essential and more accurate tools to identify changes and study mechanisms of EG shedding and systemic responses to hemorrhage and resuscitation therapy;

3) Compared to baseline and to the sham group, there was a 50% reduction in endothelial glycocalyx (EG) thickness after hemorrhage and 60% increase in the levels of plasma Syndecan-1;

4) Although resuscitation with LR and Hextend could stabilize hypotensive rats hemodynamicaly, these fluids were unable to restore EG thickness or coagulopathy (weak clots and prolonged coagulation time);

5) Rats who received fresh frozen plasma (FFP) restored venular EG thickness to baseline level in addition to improve the systemic hemodynamics and coagulation response (restored homeostasis).

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

We added a few more resuscitation groups (i.e. hypertonic saline, normal saline) to our protocol. So the next step is to test other resuscitation fluids and their effects on the endothelial glycocalyx (EG) degradation, coagulation and vacular permeability. Also we will continue to investigate the link between the EG and coagulopathy, in our rat hemorrhage model. Other measurements, such as vascular permeability (through fluorescence leakage) will also be started soon. A new Confocal microscope is being setup in our lab and we will be performing EG mesurements of specific componements (proteoglycans and glycosaminoglycans) in vivo and in situ in the cremaster muscle by next year.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

b) Books, book chapters, other publications

None

c) Manuscripts in preparation, manuscripts submitted

Torres Filho, I.P., Torres, L.N., Sondeen, J.L., Polykratis, I.A. and Michael A. Dubick - In Vivo Evaluation of Venular Glycocalyx during Hemorrhagic Shock in Rats using Intravital Microscopy. Submitted to Microvascular Research, 2012 (under review).

Torres, L.N., Torres Filho, I.P., Sondeen, J.L., Lisa, J. and Michael A. Dubick - In Vivo Evaluation of Resuscitation Fluids on Venular Glycocalyx using Intravital Microscopy. In Preparation.

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

None

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

None

Domestic

Torres, L.N., Sondeen, J.L., Polykratis, I.A., Dubick, M.A. and Torres Filho I.P. – In vivo evaluation of the endothelial glycocalyx during hemorrhagic shock using intravital microscopy. SHOCK: 37, suppl 1, p.102: P223, 2012. 35th Annual Conference on Shock, Miami, Florida, 2012.

Torres, L.N., Sondeen, J.L., Ji, L., Dubick, M.A. and Torres Filho I.P. – In vivo comparison of resuscitation fluids on the preservation of the endothelial glycocalyx after hemorrhagic shock in rats. 2012 Military Health System Research Symposium (former ATACCC), Fort Lauderdale, Florida, 2012 (posters were not published in any journal supplement).

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

None

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

None

14) *POST-TENURE POSITION / JOB TITLE*

Research Investigator

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

US Army Institute of Surgical Research (USAISR)

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☒ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center USAISR
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

8 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

LPR SUPPORT

8 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

NRC SUPPORT

7 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

I could be luckier to have Jason as my coordinator: he was absolutely great, helpful and very supportive. The moving company showed efficiency, accountability, and professionalism! I am 100% satisfied. The driver was very experienced and made my move as stress-free as possible. The only complain I have is regarding the travel reimbursements: it took a long time (more than a month or 2) to receive my reimbursements, although the staff handling the travel were always very nice and knowledgeable.

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu

THE NATIONAL ACADEMIES
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National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Vecchi	**Vittoria**	

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Street Via Carlo Poerio 15** **City, State Zip 20129 Milan, Italy**	**Home Phone: 210-3679767** **Alt. Phone: 0039-3331211383** **Preferred E-mail: vittoriavecchi@hotmail.it**
3) *Today's Date*	*Dates of Tenure* from **November 14, 2012** to **October 22, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
AMRMC	**USAISR**	
(e.g., AFRL)	**(e.g., Wright Patterson AFB)**	**(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Dr. Andriy Batchinsky

6) *TITLE OF RESEARCH PROPOSAL*

Quantitative lung CT-scan as monitoring tool for the Acute Respiratory Distress Syndrome

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) Effects of radiation dose reduction on lung quantitative CT scan results in healthy in the Acute Respiratory Distress Syndrome: low-dose chest CT as a valuable tool for quantification and monitoring of pulmonary disease reducing patient exposure

2) Use of quantitative CT for in vivo lung weight measurement: evaluate and monitor the time course of lung edema in ARDS measuring lung weight by qCT

3) Pressure-guided positioning of bicaval dual-lumen catheters for veno-venous extracorporeal gas exchange

4) Low-flow extracorporeal gal exchange for the treatment of ARDS caused by smoke inhalation and cutaneous burn in pigs

5) Extracorporeal Gas Exchange in awake spontaneously breathing sheep before and after the induction of ARDS

(USMA Davies Fellow: please add summary of teaching, including classes taught.)
N/A

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

The use of low-dose chest CT, if producing satisfactory image quality for the purpose of the quantitative analysis, could favor the use of qCT as a monitoring tool of severity and time-course of pulmonary disease reducing patient radiation exposure. The aim of the this study is therefore to investigate if and how a reduction in tube current-time product (mAs) during CT image acquisition affects quantitative results in healthy lungs and ARDS.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

b) Books, book chapters, other publications

c) Manuscripts in preparation, manuscripts submitted

- Vecchi V, Langer T, Bellomi M, Rampinelli C, Chung KK, Cancio LC and Batchinsky AI. Ultra Low-dose Quantitative CT: a Monitoring Tool for the Acute Respiratory Distress Syndrome? - manuscript submitted to the American Journal of Respiratory and Critical Care Medicine
- Langer T, Vecchi V, Belenkiy SM, Cancio LC, Gattinoni L, Batchinsky AI. Pressure-guided positioning of bicaval dual-lumen catheters for veno-venous extracorporeal gas exchange. Manuscript submitted to Intensive Care Medicine
- Extracorporeal Gas Exchange in awake spontaneously breathing sheep before and after the induction of ARDS - manuscript in preparation

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*
Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*
Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

Vecchi V, Langer T, Batchinsky AI, Ivey K, Walker K, Necsoiu C, Belenkiy SM, Dimitri R, Lucas M, Leon A, Salinas J, Cancio LC. Semi-automated Quantitative CT-scan Analysis For In Vivo Lung Weight Measurement. Experimental Biology 2012, San Diego, CA.

Domestic

Vecchi V, Langer T, Batchinsky AI, Ivey K, Walker K, Necsoiu C, Belenkiy SM, Dimitri R, Lucas M, Leon A, Meyers B, Salinas J, Cancio LC. Semi-automated Quantitative CT-scan Analysis For In Vivo Lung Weight Measurement. Military Health System Research Symposium 2012, Ft Lauderdale, Florida.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

N/A

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

N/A

14) *POST-TENURE POSITION / JOB TITLE*

Radiology Resident

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

Università degli Studi di Milano, Milan, Italy

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☐ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center ____
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☒ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*
On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

10 Development of knowledge, skills, and research productivity
Comments

LONG TERM VALUE

10 How the NRC Associateship award affected your career to date
Comments

LAB SUPPORT

10 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.
Comments

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)
Comments

LPR SUPPORT

☐ Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

NRC SUPPORT

☐ Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required;	**Asha Davis:**	adavis@nas.edu
but you may upload a scanned	**Linda Sligh:**	lsligh@nas.edu
signature file below:	**Jason Thornhill:**	jthornhill@nas.edu
	Peggy Wilson:	pwilson@nas.edu
	Suzanne White:	swhite@nas.edu

THE NATIONAL ACADEMIES
Advisers to the Nation on Science, Engineering, and Medicine
National Research Council

Research Associateship Programs

FINAL REPORT

1) *Associate Last or Family Name*	*First Name*	*M.I.*
Wong	**Benjamin**	**J**

2) *FORWARDING Address* (to which your tax statement will be mailed)	*FORWARDING Phone(s) and E-Mail* (if known)
Residence or Institution **Street 541 Kirkcaldy Way** **City, State Zip Abingdon, MD 21009**	**Home Phone: 818 561 9502** **Alt. Phone:** **Preferred E-mail: benjamin.j.wong@gmail.com**
3) *Today's Date*	*Dates of Tenure* from **February 7, 2011** to **September 4, 2012**

4) *Host Agency*	*Laboratory or Center*	*Division / Directorate / Department*
MRMC	**APG**	**MRICD**
(e.g., AFRL)	**(e.g., Wright Patterson AFB)**	**(e.g., High-Speed Propulsion)**

5) *Name of Laboratory NRC Adviser* (and USMA Mentor, if applicable)

Dr Alfred Sciuto

6) *TITLE OF RESEARCH PROPOSAL*

Treating Chemical Agent Exposure Through Multiple Drug Delivery Routes

7) *SUMMARY OF RESEARCH DURING TENURE* **Itemize significant findings in concise form, utilizing key concepts/words.**

1) **Developed and characterized novel system for inhalational exposure of conscious animals to chemical agents**

2) **Utilized above system to examine the toxicokinetics (TK) of nerve agents and their analogs in rats**

3) **Investigated utility of bronchodilators in a treatment regimen for inhalational chemical agent exposure**

4)

5)

(USMA Davies Fellow: please add summary of teaching, including classes taught.)

8) *RESEARCH IN PROGRESS* **Describe in no more than 100 words.**

Current research focuses on the inhalation of various chemical agents and the associated effects on different organ systems in order to characterize the role of exposure route on progression and presence of symptoms. The body of literature that describes the inhalation of chemical agents is incomplete, despite being the most likely route by which agent will enter the body. The route of exposure is central to the progression and presence of symptoms, which in turn form the basis for the development of treatments and treatment regimens. Recent development of a novel inhalation model has progressed research toward development and characterization of improved methods of drug delivery in chemical agent exposure scenarios.

9) *PUBLICATIONS AND PAPERS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide complete citations: author(s), title, full name of journal, volume number, page number(s), and year of publication.

a) Publications in peer-reviewed journals

N/A

b) Books, book chapters, other publications

N/A

c) Manuscripts in preparation, manuscripts submitted

1. Development of Model for Nerve Agent Inhalation in Conscious Rats
2. Respiration Toxicity in Non-Anesthetized Rats Following Inhalation Exposure to Soman Vapor
2 others, as yet untitled, in preparation

10) *PATENT OR COPYRIGHT APPLICATIONS RESULTING FROM NRC ASSOCIATESHIP RESEARCH*

Provide titles, inventors, and dates of applications.

N/A

11) *PRESENTATIONS AT SCIENTIFIC MEETINGS OR CONFERENCES*

Provide complete references: author(s), title, abstract/proceeding citation, meeting name and location.

International

N/A

Domestic

1.
B. Wong, A. Sciuto, G. Murphy.
Development of a Head-Out Vapor Inhalation Model for the Evaluation of Toxicity Following Exposure to Chemical Agents in Non-Anesthetized Rats.
US Army Medical Defense Bioscience Review, Hunt Valley, MD.

2.
B. Wong, A. Sciuto, G. Murphy
A Head-Out Vapor Inhalation Model for the Evaluation of Soman Toxicity in Non-Anesthetized Rats
Shoresh Chemical and Biological Defense Conference, Fort Detrick, MD.

12) *SEMINARS OR LECTURES DELIVERED AT UNIVERSITIES AND/OR INSTITUTES* **Include dates, names and locations of seminars.**

N/A

13) *PROFESSIONAL AWARDS RECEIVED DURING TENURE*

N/A

14) *POST-TENURE POSITION / JOB TITLE*

Post-Doctoral Research Associate at MRICD

15) *NAME AND ADDRESS OF POST-TENURE POSITION / JOB ORGANIZATION*

USAMRICD
3100 Rickett's Point Road
APG, MD 21010

16) *POST-TENURE POSITION STATUS / CATEGORY* **Please indicate only one.**

- ☐ Permanent position at the NRC host agency
- ☒ Contract or temporary position at the NRC host Agency
  Abbreviate Host Laboratory/Center APG-MRICD
- ☐ Research/Administrative position with another U.S.-government agency
- ☐ Research/Administrative position with a foreign-government agency
- ☐ Research/teaching position at a U.S. college or university
- ☐ Research/teaching position at a foreign college or university
- ☐ Research/administration position in private industry in the U.S.
- ☐ Research/administration position in private industry outside of the U.S.
- ☐ Research/administration position with a non profit
- ☐ Self-employed/consulting
- ☐ Postdoctoral research
- ☐ Other **(Please specify, possible)** ____
- ☐ No information provided

17) *APPRAISAL OF RESEARCH ASSOCIATESHIP PROGRAM*

On a scale of 1 – 10 (poor - excellent), please rate the following:

SHORT TERM VALUE

9 Development of knowledge, skills, and research productivity

Comments

Work at MRICD was intended to continue the research from my graduate work; however, the research took on its own directions, resulting in development of knowledge and skills in new areas which complemented my existing knowledge base well. Despite many technical hurdles, challenged proved to help maximize productivity. Overall, work here has provided a different set of challenges, which have resulted in net positive gains in all categories.

LONG TERM VALUE

8 How the NRC Associateship award affected your career to date

Comments

Cannot currently ascertain effects, as a permanent position at my institute was not available, rendering it difficult to assess the competitive benefits of an NRC fellowship. However, the NRC program has helped me make connections which are likely to have a beneficial effect on my career in the future.

LAB SUPPORT

8 Quality of support from the Laboratory--equipment, funding, orientation, safety and health guidelines, etc.

Comments

Funding has struggled for the institute recently, and orientation was somewhat confusing. Guidelines for safety and health are excellently implemented in the laboratory setting but less observed in the office setting. Host laboratory/advisor group has done the best possible given the overall situation.

ADVISER/MENTOR SUPPORT

10 Quality of mentoring from the Laboratory NRC Adviser (USMA Mentor, if applicable)

Comments

Dr Sciuto has provided me with excellent support in all aspects of laboratory work and research and career opportunities. I have been able to integrate my skill and mindset into an adaptive laboratory group and have been encouraged to contribute in any possible. He is the type of mentor that is able to help all personality types excel, and I have noted that in both myself and the people I work with in his group.

LPR SUPPORT

8 Quality of administrative support from the **L**aboratory (e.g., NIST, NRL, IWR, FHWA) NRC **P**rogram **R**epresentative (LPR)

Comments

Dr Kan has been available for all the necessary assistance I have needed in terms of communication between the institute and NRC.

NRC SUPPORT

9 Quality of administrative support. Please assess respective NRC aspects (e.g., moving company, insurance, Omega, payroll, coordinator, travel, etc.)

Comments

I was on a very tight schedule to move out when I received my appointment, and within 10 hours of having been confirmed, a everything concerning my move was sorted out. The moving company was excellent and reliable and the billing was easily sorted out with the NRC. The personnel in charge of communicating with me for health insurance were knowledgeable and of great assistance. Travel and payroll were also excellent in their communication and ability to rapidly process requests.

18) *PLEASE PROVIDE ANY SUGGESTIONS FOR PROGRAM IMPROVEMENT.*

Communication on whether it was possible to obtain a security clearance through NRC was somewhat lacking, or uninforming. Clear delineations as to the policy would be helpful, especially to the institute.

Please do NOT scan to PDF. Send the Final Report as MSWord document via e-mail to your NRC Program Coordinator

No handwritten signature required; but you may upload a scanned signature file below:

Asha Davis: adavis@nas.edu
Linda Sligh: lsligh@nas.edu
Jason Thornhill: jthornhill@nas.edu
Peggy Wilson: pwilson@nas.edu
Suzanne White: swhite@nas.edu